USE OF PSYCHODIAGNOSTICS IN HIRING – COMPARISON ON STUDENTS FROM PRAGUE UNIVERSITIES

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Abstract: *This paper presents results of comparing technical university students with students studying tourism from the perspective of their personal diagnostics. We used the Big Five personality traits and Grit-S scale as these are fast and reliable tools that can reveal, among others, whether job applicants have the personality profile required for the job. In the case of tourism, the applicants should be extraverted, agreeable and with a low level of neuroticism. The study showed that the personality of tourism students is on average within the population norm, but they differ significantly from technical students in certain personality factors. Tourism students manifest significantly higher conscientiousness and agreeableness than technical students. It can be presumed that students with greatest perseverance and conscientiousness are those studying tourism, then students studying management at technical schools, whereas rather technically and science-oriented VSCHT students had the lowest score.*

Keywords: *Big Five, Grit-S, employee selection, comparison*

1. INTRODUCTION

The competition in industry is great. Tourism is no exception with many entities around. On the other hand, the demand for their services is limited. Therefore, companies are acutely concerned with attracting and retaining highly qualified experts [1]. There are two extreme approaches how such experts can be hired. One of them is to take the best experts from the market, the second way is to educate employees so that they suit perfectly employer´s needs. Since hiring the best applicants is complicated and expensive, many companies train their own employees. From the perspective of selection, it is necessary to find applicants who are prospectively suitable, i.e. with best competences possible and – most importantly – with an appropriate personality profile and willingness to develop themselves in professionally. What gets to the fore in such cases are psychodiagnostics methods of selection.

Current performance aspects can be quite well revealed using relatively accurate performance tests. Predicting employees' behavior is more complicated. General personality traits are used for employee selection [2]. Furthermore, modern world requires high-quality results in a time that is as short as possible while expending the lowest costs possible. That is one of the reasons why the OCEAN concept became very popular: it describes a personality using five basic areas: Conscientiousness, Extraversion, Agreeableness, Neuroticism, and Openness to experience. There are other fast tools that can be employed by diagnostics: suitability to further education can be assessed using, for instance, the grit scale. It is likely that applicants with a higher degree of perseverance will be more willing to take part in training until the end and they are also likely to be more loyal at work.

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The OCEAN concept (in John´s form – Big Five) and the grit scale are used in our research. The objective of the study is to assess whether a tourism university student distinguishes with relevant characteristics from a technical university student. The sample consists of bachelor students to find if personality influences choice of university. We shall also reveal what their average personality orientation is and whether their majority meets personality requirements linked with managerial jobs in tourism.

2. THEORETICAL FRAMEWORK

The selection process is one of fundamental HR activities. Its purpose is to recognize which applicants are most suitable for the company and evoke their interest in the job offered. The first goal is usually accentuated. Psychometric tests, interviews and other selection methods are routinely used to guide selection decisions in practice [3]. The basic thing in selection is an interview that is in some cases also the only applicable tool. In a research carried out by [3] interviews were the marked as the most frequently used method unambiguously by all groups of evaluators.

Theory distinguishes between several types of job interviews depending on how many people participate. It can be a "face-to-face" interview between an applicant ant the evaluator. With respect to the fact that more evaluators participate in assessment (HR officer, future immediate superior, a top manager and sometimes also a psychologist and a language expert) applicants need to go through several interviews. A specific form of this type of interview is a situation when an HR officer is alone in the first round, but is also present in the second round, accompanied by the applicant's future immediate superior. The reasons for this may be that the HR officer can assess to what extent applicants' behavior is consistent in both round, while the HR officer may also be a "safeguard" so that a manager who is inexperienced with hiring does not make serious mistakes and for some applicants the presence of the HR officer may be a reassuring element since they are "familiar" with him/her after the first round. Another type is an interview in front of a panel of evaluators, but it is more stressful for applicants than the previous alternative, since such applicants "face" a group of interviewers on "foreign ground". In this way it is highly recommendable that one of the evaluators is a selection expert who ensures setting conditions that are favorable to applicants as much as possible. In certain cases, particularly when hiring workers for uncomplicated work, typically manual, a group interview can be applied during which one or more interviewers assess groups of applicants.

Another way of how job interviews can be divided is by their formal preparedness: in such a case we distinguish between a structured, semi-structured and unstructured interview. Inexperienced interviewers should exclusively use structured interviews when applicants are asked prepared questions in predefined wording. Naturally, interviewers need to prepare also for an unstructured interview, but in that case they have only prepared (thought of) topics about which they want to learn something during the interview, their sequence and they decide on the wording of their questions depending on the development of the interview. An unstructured interview allows for responding better to unexpected circumstances and it is probably more natural; the risk is that the interviewer may omit to discuss certain field as some other information from the applicant catches his/her attention. It is also more complicated to keep track of time and note down answers. After all, it is always possible to use elements from a semi-structured interview and adjust the prepared sequence of questions with respect to the situation and/or complement it with further questions.

Interviewers sometimes make interviews rather stressful, particular in cases when they unconsciously dislike an applicant or when they are tired of interviewing. Of course, this is wrong. Nevertheless, they may actually use this form of an interview purposefully when they need to see how applicants behave under pressure. In such cases it is possible to apply time pressure, raise voice, or more interviewers may ask questions at the same time, but it is necessary to assure applicants immediately after such an interview that this is not the usual way how the company´s manager behave and explain that pressure was exerted in order to check how applicants behave under pressure and simulate a situation in which applicants may occur in their job. If no explanation follows, there is a real danger that applicants who are offered the job refuse it as they are not interested in working for an aggressive or moody company.

The last option how interviewers can go about selection process is a screening interview that can be used in case there is a large number of applicants, typically in groups and after eliminating unsuitable applicants. However, screening only provides approximate information and after it is used it is still necessary to proceed with further forms of interviews.

The second most frequently used method was job experience evaluation and the third were references [3]. In case a more detailed analysis is required, an interview is complemented with professional skill testing, psychodiagnostics methods, solving case studies or with references. In his research, [3] assessed the frequency of use and fairness of 13 selection methods: GMA tests; Interviews; Job tryouts; Assessment centers; Biodata; Academic grades; Work experience; Reference checks; Personality; Interests; Training; Years of education; Age. The least frequent were Interests, Age and Personality (11th position). Personality also had low perceived fairness (9th position) despite the fact that assessing whether an external candidate's personality is suitable for the organization, which is often described as a key factor that influences efficiency of employees and it is also one of the hardest elements to assess in a hiring process [4].

When applying psychodiagnostics it is possible to use several types of tools for predicting mental fitness. We can distinguish between personality and performance tests. Psychodiagnostics tests are currently very popular and rather easy to get. According to Koubek, Western Europe and the USA in particularly see a trend of withdrawing from large-scale use of psychological tests [5]. These are typically special tests focused on deeper understanding of personality orientation, stress resistance or checking the necessary requirement for the job. However, they always need to be evaluated by an experienced psychologist. But with respect to their availability and adjustments to easy- and fast to use tools reviewed and pragmatic diagnostic tools, are also used by laypeople. When employees' psychometric characteristics are required for their jobs, even [6] consider personality questionnaires and cognitive ability tests suitable.

The most frequently used personality tests are various questionnaires and assessment scales, whereas the most frequently performance tests are those that measure intelligence and some special abilities such as memory, creativity or stress resistance. It is interesting to note that applicants consider personality tests less favorable than other competing selection tools (e.g. interviews and work samples) [7].

Although there are many personality theories ranging from Freud to Allport, Eysenck to Rogers, the currently most widely used approach in practice are MBTI by Cook Briggs and Myers Briggs and particularly Big Five. Finding its authors is quite a challenge. The basis was probably laid by Eysenck's multidimensional concept, five factor model was also constructed by Goldberg, some claim its author is Digman, while others believe it was Robert (Jeff) McCrae and

Paul Costa. According to [8] this five-factor model was created on the basis of factor analysis of words describing personality. The five most significant factors were extraversion, agreeableness, emotional stability, conscientiousness and intellect. This model is also known as OCEAN, which is the acronym of initial letters of the following words: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

Openness to experience can also be understood as intellect and people with a high score are curious, original and intelligent. High score in conscientiousness means that the person is reliable, hardworking and persistent, individuals scoring highly on extraversion are people-oriented and optimistic. Agreeableness is linked with altruism, trustfulness and trustworthiness, whereas high score in neuroticism means the individuals are tense, restless and hypochondriac [9].

At present, this concept is studied using questionnaires called NEO Inventories (NEO Personality Inventory-3 (NEO-PI-3), Revised NEO Personality Inventory (NEO-PI-R™), and NEO Five-Factor Inventory-3 (NEO-FFI-3)) created by Paul T. Costa and Robert R. McCrae [10] and Big five (Big five inventory (BFI-2) or abridged versions BFI-44 and BFI-10) developed by John and his colleagues [11]. The first NEO-PI-R needs 45 minutes for administration, the abridged form NEO-FFI with 60 items only 10 minutes. BFI-2 also contains 60 items, but John tried to compile even shorter inventories with only 44 and 10 items.

While extremely short questionnaires minimize the time needed for administration, they do not provide sufficiently detailed assessment for diagnostic purposes. On the other hand, in selection processes there is usually not enough time for a personality questionnaire to be processed more than 10-15 minutes: these requirements are well met by BF-2 and NEO-FFI-3 that both contain 60 items.

Also, Hogan Personality Inventory (HPI) is based on the Five-Factor Model of Personalities. It is used to measure normal, or bright-side personality. It contains 266 true/false and agree/disagree questions. Unlike the Big five or NEO, uses the HPI seven scales: Adjustment, Ambition, Sociability, Interpersonal Sensitivity, Prudence, Inquisitive, and Learning approach [12]. It also predicts work performance by measuring six occupational scales: Service Orientation, Stress Tolerance, Reliability, Clerical Potential, Sales Potential, and Managerial Potential. Correlations among five factors models and HPI are shown Figure 1.

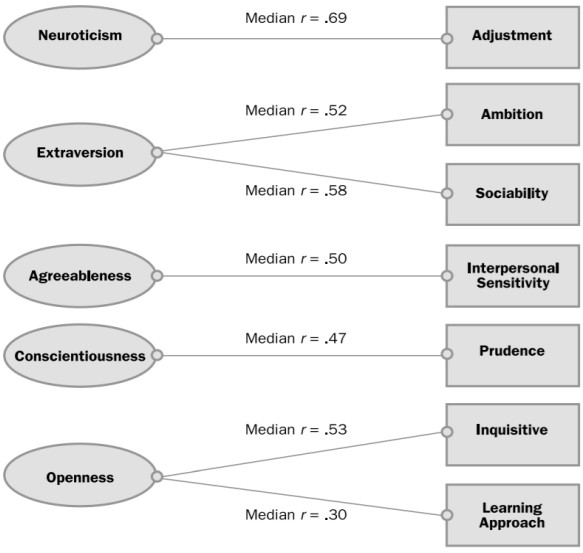

Figure 1: Correlations among Big five and HPI personality profile Source: [12], p. 55.

Other standardized personality questionnaires are significantly longer. Among those that, like the OCEAN concept, have developed by factor analysis are the well-known 16 PF Raymond Cattel. It contains 187 items (in English version). As the name implies, the questionnaire measures 16 personality factors: Warmth (A); Reasoning (B); Emotional Stability (C); Dominance (E); Liveliness (F); Rule-Consciousness (G); Social Boldness (H); Sensitivity (I); Vigilance (L); Abstractedness (M); Privateness (N); Apprehension (O); Openness to Change (Q1); Self-Reliance (Q2); Perfectionism(Q3); Tension (Q4). Their collection into global factors is described in Table 1. For each factor is also added the short description of high and low range. For example, descriptors of high range in factor Warmth (A) are Warm-hearted, Carrying, Attentive to others. The descriptors of low range for the same factor are Reserved, Impersonal, Distant.

Extroversion/ Introversion	**High Anxiety/ Low Anxiety**	**Tough-Mindedness/ Receptivity**	**Independence/ Accommodation**	**Self-Control Lack of/ Restraint**
A: Reserved/Warm	C: Emotionally Stable/Reactive	A: Warm/Reserved	E: Deferential/ Dominant	F: Serious/Lively
F: Serious/Lively	L: Trusting/Vigilant	I: Sensitive/ Unsentimental	H: Shy/Bold	G: Expedient/Rule-Conscious
H: Shy/Bold	O: Self-Assured/ Apprehensive	M: Abstracted/ Practical	L: Trusting/Vigilant	M: Abstracted/ Practical
N: Private/Forthright	Q4: Relaxed/Tense	Q1: Open-to-Change/ Traditional	Q1: Traditional/Open-to-Change	Q3: Tolerates Disorder/ Perfectionistic
Q2: Self-Reliant/ Group-Oriented				

Table 1: 16PF global factors and the primary trait Source: [13], p. 138.

The 16 PF was used also in original development of Big five [14]. Many studies confirm correlation between the NEO factors and the 16PF factors, it means between two extraversion factors, between anxiety and neuroticism, between self-control and conscientiousness, between tough-mindedness and openness to experience, and between independence and dis-agreeableness [15]. [16] claim that the average correlation between the NEO and global 16 PF factors is just high as those between NEO and Big five factors. Correlations are confirmed also between 16PF factors and MBTI approaches [15].

The 16PF personality test is used by employers for hiring, promotion, coaching, and career development. The problem is that interpretation of 16 items profile asks a psychologist with experience.

Other personality questionnaires used for psychodiagnostics purposes during selection process are for example Business-Focused Inventory of Personality (BIP), California Psychological Inventory (CPI), the Multidimensional Personality Questionnaire (MPQ) etc.

Business-Focused Inventory of Personality (Bochumer Inventar zur berufsbezogenen Persönlichkeitsbeschreibung, BIP) is an empirical method developed in Germany [17]. The standard

version is the self-report questionnaire (Form S) but it exists also short version (Form O), completed by others. Both of them include 14 scales (in the Form O, there are only 3 items per each scale). The scales are arranged into four conceptual domains:

- Occupational Orientation – assessing work-specific motivation, this domain considers what motivates respondents in planning and shaping their career path and what they value in a job;
- Occupational Behavior – assesses the typical approach to work;
- Social Competencies – this domain describes the style of interacting with other people;
- Psychological Constitution – this domain seeks to describe how the demands made by a range of tasks at work, impact on a person's resilience and experience of emotional pressure.

The result is a picture of personality attributes (see Figure 2), which are important for realizing of a wide range of work activities. The construct validity shows, that scales correlate with appropriate scales of other tests (NEO, 16PF). In Czech language version miss out a construct validity [18].

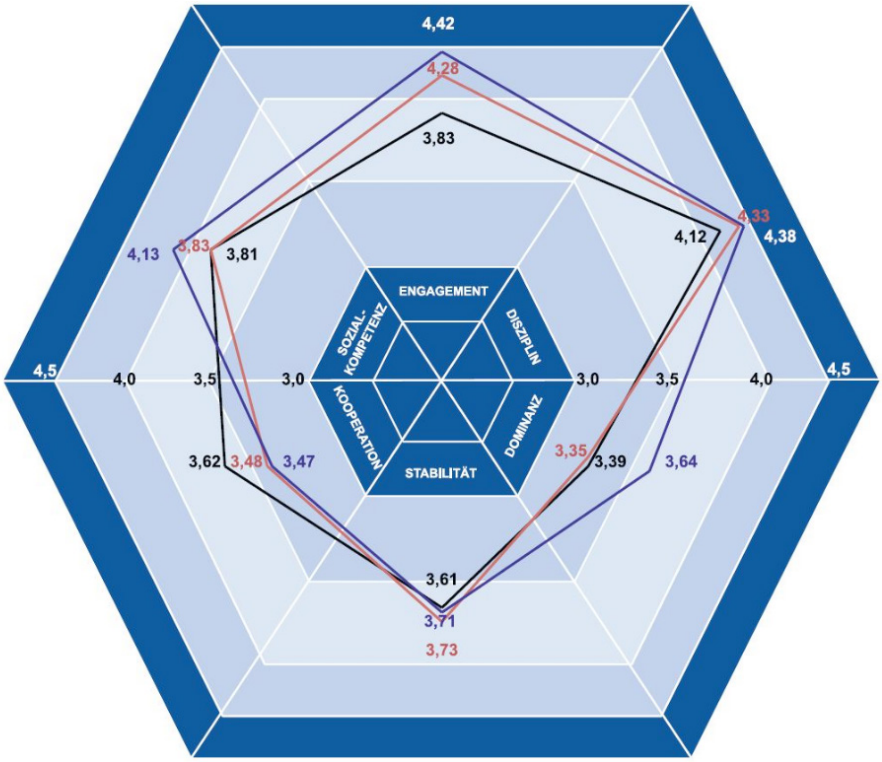

Figure 2: Illustration of BIP personality profile Source: [19]

In Germany was developed also Freiburg Personality Inventory (Freiburger Persönlichkeitsinventar, FPI) in 1970. It is also self-report questionnaire. The standard version included 210 items, the revised version only 138 items. The authors selected ten traits and two other secondary factors. Their description is in table 2.

California Psychological Inventory (CPI) is a very popular questionnaire created in half of 20th century and many times updated. It includes 468 items, and they fulfill 18 scales which are designed to assess personality characteristics important from a social interaction point of view, grouped in 4 broad categories emphasizing effective interpersonal functioning: measures of

poise, ascendancy, and self-assurance; socialization, maturity, and responsibility; achievement potential and intellectual efficiency; and intellectual and interest modes [21]. This questionnaire was developed for "normal" (non-psychiatrically disturbed) subjects and there it is possible to use it for employees' selection. But 468 items are too much, and there it is used more often for developing purposes, which means to find strengths and weaknesses in personal profile for the current position of employee.

Primary scales	
LIFE SATISFACTION	contented with life, optimistic, hopeful versus discontented, depressed, negative attitude towards life
SOCIAL ORIENTATION	socially responsible, helpful, considerate versus self-concerned showing little solidarity, uncooperative
ACHIEVEMENT ORIENTATION	achievement oriented, active, acting quickly, ambitious, competitive versus low achievement orientation, low energy, lacking ambition, non-competitive
INHIBITEDNESS	inhibited, unsure of self, shy versus easy-going, self-confident, outgoing
IMPULSIVENESS	easily aroused, hypersensitive, uncontrolled versus calm, composed, under control
AGGRESSIVENESS	spontaneously and reactively aggressive, pushy, assertive versus non-aggressive, controlled, restrained
STRAIN	tense, overwrought, stressed versus unstrained, unpressured, able to handle stress
SOMATIC COMPLAINTS	many complaints, psychosomatically disturbed versus few complaints, not psychosomatically disturbed
HEALTH CONCERN	afraid of illness, conscious about health, treating oneself with care versus not worried about health, unconcerned about health, robust
FRANKNESS	frankly admitting minor weaknesses and common violations of norms, unembarrassed, versus oriented to norms of conduct, concerned with making a good impression, unable to be self-critical, closed
Secondary scales	
EXTRAVERSION	extraverted, sociable, impulsive, enterprising versus introverted, reserved, reflective, serious
EMOTIONALITY	emotionally labile (unstable), hypersensitive, anxious, many problems and physical complaints versus emotionally stable, composed, self-confident, content with one's life

Table 2: FPI scales description Source: [20], p. 169

A bit more items (more than 500) includes the famous personal questionnaire, the Minnesota Multiphasic Personality Inventory (MMPI). This questionnaire was developed by Starke R. Hathaway and J. C. McKinley at Minnesota University in 1940 [22]. It was many times updated. Although the questionnaire was developed for clinical practice it was very often used for personal screening of potential employees. More than 100 items were, for example, used in the first version of CPI. The items are collected into a lot of different scales. There exist clinical scales (10), restructured clinical scales (9), validity scales (11), content scales (15), supplemental scales (12) and Personality Psychopathology scales (5). The researchers collect their own scales using items of MMPI.

In the Czech Republic are for diagnostics of personality often used Brno personality questionnaire, horizontal (Brněnský osobnostní dotazník, horizontální, BOD/h), Gordon personality profile- Inventorium (GPP-I) and the collection SPARO. SPARO is the basic tool of diagnostic battery DIAROS, developed by Mikšík. SPARO seek basic components of basal components of mental integration: cognitive variable (KO), emotional variable (EM), regulatory variable (RE), and adjusting variable (AD). The more complex dimensions are Normality of personality (N), Optimal stimulation level (S), Individual tendency to risk (I), Interpersonal relationships (V), Internal correction (K), and Self-promotion (P) [23]. All these questionnaires are more often used in clinical practice than for diagnostics during hiring or employee development.

Other tests used in job interviews, besides psychodiagnostics tests, are expert tests which are focused on examining the skills, abilities and knowledge required for the job. Tests that investigate expert qualification include the following ones:

a) job tests – it is a simulation of the actual working process,
b) manipulating numbers and a dictate – examines the ability to work with numbers and type,
c) manual dexterity test – intended for examining the degree of motor and sensorimotor abilities,
d) telegram test – examines the ability to express heart of the matter by transforming a stylistically distorted text on a form of a ten-word telegram,
e) expert gap test – is used for examining the knowledge of expert terms that applicant fills in gaps in a report,
f) comparison of two written reports – examines work pace and conscientiousness of the examined person. Applicants are given a list and its copy with mistakes: the task is to mark the mistakes within a time limit,
g) Wartegg test – it is a projective graphic test that contains eight squares with unfinished drawings; the applicant is asked to complete the drawing. As the case is with all projective tests, applicants inadvertently project something from their personality. Wartegg test is aimed at revealing people's reactions to some types of conflict situations.

Another possibility, especially for managerial jobs, is to use case studies. It is a description of an actual or fictional situation and applicants are given the task to come up with the best solution possible.

In order to achieve the highest degree of objectiveness when assessing job applicants, it is advisable that evaluators know the subconscious tendencies that influence every evaluation. Since they are subconscious, they are hard to eliminate. However, if the evaluator knows about them, he/she can try to decrease their influence deliberately. These tendencies typically include:

- Halo effect – an assessment on the basis of a distinctive feature of another person [24]; typical mainly in selection interviews,
- sympathies and antipathies – they occur in all types of assessments; a likeable person usually receives better assessment than such a person should be objectively given,
- not using utmost values of the evaluation scale – evaluators often unwittingly "spare" extreme values in case they come across even more extreme cases,
- graying effect – typical when an evaluator does not compare a particular performance with a certain standard but with previous assessment; an average employee evaluated after a series of extraordinary peers usually receives only below-average marks, whereas if he were preceded by low performance peers he would seem to be above-average,

- inertia effect – if an evaluator gave an applicant in, for instance, first four competences objectively highly above-average assessment, the evaluator is inadvertently driven to give high evaluation even in fifth competence regardless of how the applicant actually fares,
- horn effect – the evaluator is influenced by information he/she overheard before the actual assessment,
- black and white vision – excessive conciseness in assessment, if something is not perfect it is considered totally wrong [24],
- bias against differences – subconscious assessment of some groups on the basis of evaluator's own generalizing impression; this may concern ethnic minorities (Asians are good at mathematics, Greeks, Spaniards or Romani are lazy), religion, age, gender, sexual orientation, etc.,
- comparison with the evaluator – comparing the applicant's performance with the assessor's presumed performance does not have to be necessarily wrong, but it is usually far from objective assessment.

It is beneficial to the selection process if an assessment center is involved. However, assessment center is an expensive tool designed for the needs of a particular employer, so it is only used when a larger number of employees are hired. Assessment centers use psychodiagnostics tests, observation when applicants solve simulated job situations, behavior under stress, team work and communication or a managerial vision, a task that reveals applicants' ability to predict development of a certain phenomenon linked with company's operation. The precondition of evaluating this task correctly is the evaluator's intuition, knowledgeability and experience. This method is used as complementary when hiring employees for jobs in middle and top management. Assessment center is based on the evaluators' evaluation of measurable criteria. The team of evaluators includes not only trained specialists from an advisory agency, but also relevant managers from the client's company. In principle, a group of some twenty years is compared of daily basis: two or three best applicants always promote to another round (assessment day). It is faster, cheaper and more objective than evaluating the same number of applicants individually. On the other hand, this method is demanding in terms of organization and candidates' time [5].

3. METHODOLOGY

Participants included 397 bachelor students from four universities in Prague, Czech Republic (Czech Technical University in Prague (ČVUT), Czech University of Life Sciences Prague (ČZU), University College of Business in Prague (VŠO), and University of Chemistry and Technology Prague (VŠCHT)). The sample is described in Table 3. They answered Grit-S [25] and BFI-2 [26] instruments, and two control variables - gender and age.

	Male	***Female***	M_{age}	SD_{age}
ČVUT	18	45	20.89	1.056
ČZU	34	59	23.54	2.459
VŠO	23	73	20.57	1.961
VŠCHT	53	92	23.86	1.062

Table 3: Participants' demographic data

The research was carried out in spring 2018 (except VŠO where it was carried out in September 2018). All questionnaires were written in participants' native language (i.e. in Czech).

BFI-2. We used the BF-2 version [26]. It is a five-factor questionnaire measuring Big Five personality. For each factor, there are 12 items. Response options range from 1 (strongly disagree) to 5 (strongly agree).

Grit-S. We used the Grit-S [25]. It is an abridged version of the 12-item Grit-O [27]. It is a two-scale questionnaire, each with four items. Consistency of Interest, referring to the consistency in one's interests over time; and Perseverance of Effort, which involves sustaining effort in the face of adversity. Response options range from 1 (not at all like me) to 5 (very much like me).

4. RESULTS AND DISCUSSION

First, we inquired whether the students correspond on average with the population standard for Big Five. Using mean values and standard deviations of Soto's extensive research [26] T-scores were calculated for the students. The mean was 50 with a standard deviation of 10, which is more convenient for orientation than the most frequently used division (z-score, with a mean of 0 and a standard deviation of 1). The mean values for students from the observed schools are shown in Table 4. For the time being, it is not a sufficiently big sample for Grit-S to create the population standard.

		Big Five				
		Ext	Agree	Consc	Neur	Openn
ČVUT	average	52.3	50.9	50.3	47.5	43.2
	standard deviation	8.4	6.8	8. 5	8.1	8.9
ČZU	average	51.6	50.6	50.7	49. 1	42.0
	standard deviation	8.3	8. 0	7.5	7. 7	9.6
VŠCHT	average	52.5	49.1	46.8	48.2	47.3
	standard deviation	8.3	9.2	9.2	9.3	9.0
VŠO	average	53.7	52.0	52.2	47.5	43.6
	standard deviation	7.1	7.9	7.7	7.2	8.0

Table 4: T-score values for Big five personality traits

It is apparent that all the students are in line with the population standard. It was waiting, because it would be very unusual if such big groups would be beyond any standards. Nevertheless, this does not rule out the possibility that there might be significant differences between the groups.

The parameters were compared using t-test. For this reason, it was necessary to check the dispersion homogeneity. Results of F-tests are shown in Table 5.

	Big Five					***Grit-S***		
	Ext	Agree	Consc	Neur	Openn	consist. of interest	persev. of effort	total
ČVUT vs. VŠO	1.414	0.742	1.209	1.282	1.232	1.272	**5.517**	**1.929**
ČZU vs. VŠO	1.377	1.002	1.064	1.141	1.447	1.041	**5.703**	**2.317**
VŠCHT vs. VŠO	1.370	1.350	1.430	**1.681**	1.256	1.215	**4.942**	**2.053**
technical universities vs. VŠO	1.375	1.119	1.281	1.427	1.393	1.154	**5.299**	**2.102**

Table 5: F tests results

The critical value for F-test was 1.55. Scatter in the samples was thus coincident, with the exception of a few cases marked in the table in bold. In cases when the means differed, we applied t-tests (in table in italic). The resulting values of t-tests are shown in Table 6.

	Big Five					***Grit-S***		
	Ext	Agree	Consc	Neur	Openn	consist. of interest	persev. of effort	total
ČVUT vs. VŠO	1.096	0.912	1.400	0.001	0.342	1.856	*1.789*	***2.273***
ČZU vs. VŠO	1.849	1.151	1.324	1.490	1.241	0.037	*1.936*	*1.583*
VŠCHT vs. VŠO	1.146	**2.524**	**4.635**	*0.654*	**3.194**	1.333	***2.310***	***2.565***
technical universities vs. VŠO	1.587	**2.096**	**3.380**	0.860	1.068	1.241	***9.256***	***2.460***

Table 6: Student t-tests results

The critical value for t-tests was 1.99. Therefore, most means in the samples are coincident, exceptions are highlighted in bold.

The results clearly show that the main carrier of change at technical and tourism students is VŠCHT. When the change was significant, another mean from the VŠCHT and VŠO sample was always significantly different. The other two technical schools differed with the mean from the VŠO mean (total grit value) in only one case.

The cause of this fact may be that the ČVUT sample consisted of students from the Masaryk Institute, i.e. students who plan to become managers. Similarly, ČZU students were only from the Faculty of Economics and Management, i.e. again future managers. However, the interest at VŠCHT in studying economics and management is marginal and it is possible that this is manifested in Bachelor program students already. That is why we also compared students from different technical schools and it showed that ČVUT and ČZU students are more conscientious than VŠCHT students (2.554 and 3.374 respectively with the same critical value of t-test, t_{crit}=1.99), and VŠCHT students are more open than ČVUT and ČZU students (3.031 and 4.273 respectively with the same critical value of t-test, t_{crit}=1.99).

Tourism students manifest significantly higher conscientiousness than the case is with VŠCHT and other technical students. It is a factor representing reliability, perseverance, and diligence. This factor usually correlates strongly with grit. This is also confirmed by our research in which VŠO students are generally more persistent than technical students as well as than ČVUT and VŠCHT students. VŠO students also had better score in perseverance than technical school and VŠCHT students and non-significantly higher than ČVUT and ČZU students.

It can be presumed that students with greatest perseverance and conscientiousness are those studying tourism, then students studying management at technical schools, whereas rather technically and science-oriented VŠCHT students had the lowest score.

VŠO students also scored greater agreeableness than technical university and VŠCHT students. There are not significant differences between technical students in this factor, but the values suggest that the difference may be due to the difference of VŠCHT students who dominated the sample of technical university students. Higher score in this factor defines an individual as a good-hearted, trustable and trustworthy which are traits suitable for an employee who gets in

frequent contact with clients and/or subordinate employees. It should also be noted that a scientist or a technician could be trustable and they should verify data as much as their communications are verified and confirmed.

The last significant difference detected was between VŠO and VŠCHT students while VŠCHT students scored higher openness than VŠO students. People with a high score in openness are curious, original and intelligent. Whether it is a fluid or rather crystallized intelligence would have to be verified with an intelligence test. A relatively high share of scientists, that is the future occupation of VŠCHT graduates, may indicate that they are really curious people with a need to reveal connections and to search for new ways of using their findings. Naturally, all students who are able to study at a university must be intelligent and intelligence and originality will certainly come handy even if they work as managers.

5. CONCLUSION

The selection process is an essential personnel activity necessary for hiring suitable employees. It usually rests on job interviews, but there are many factors that may affect a job interview: unpreparedness, subconscious tendencies, insufficient awareness of criteria, lack of time, etc. This is why it is advisable to use an assessment center when selecting employees or at least to invite other experts well versed in hiring to participate in interviews.

One of recommended methods is psychodiagnostics assessment of applicants. Our research showed that even when large groups of students are generally within the population standard; but we can also find significant differences between them. Tourism students in Prague in year 2018 proved to be more agreeable (meaning trustable and trustworthy) and also more conscientious (reliable, persistent) then technical students in the same year. Their higher conscientiousness was confirmed by higher values of perseverance (grit) that correlates with conscientious investigated using Big Five.

We can presume even greater differences between individuals, which is why employees' profile should be taken into account when hiring.

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