ERGONOMICS AND THE MEANING OF WORK

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Abstract Ergonomics can be defined as interaction between humans and other elements of a system in order to optimize human well-being and overall system performance. Well-being is the experience of health, happiness, and prosperity. It includes having good mental health, high life satisfaction, and a sense of meaning or purpose. The Sustainable Development Goals defined by the 2030 Agenda for Sustainable Development, officially approved document by United Nations in 2015 has in the third position "Good Health and Wellbeing" after "Now Poverty" and "Zero Hungry". Also from the total of 17 Sustainable Goals in the position 8 are Decent Work and Economic Growth. In the real life the companies and studies from the developed societies saw that the average digital natives' generations have a lower level of work motivation and meaning of work, an increasing percent of single-person households, lower level of happiness even if for the younger people physical and psychological comfort are higher than in the case of older generations. Without any actions, considering the speed of the Artificial Intelligence development that can replace a lot of routine jobs, the situation will get worse. A solution can be to develop forward organizations that have meaning for individuals and communities and make feel again that work makes them useful for the communities, it makes them feel like they belong to society and they have recognition in society somehow as ergo-therapy act in the psychiatry medicine. As representation for the importance of the meaning of work, in the current article, the results are presented from the first stage of the collaborative research "Genrations@Work", made between 22nd of February 2019 and 28th of June 2019, as a research team leader.

Keywords: ergonomics; well-being; future of work; workplace.

1. INTRODUCTION

According to the International Ergonomics Association (IEA) ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance [20,21].

The Sustainable Development Goals defined by the 2030 Agenda for Sustainable Development, officially approved document by United Nations in 2015 has in the third position "Good Health and Wellbeing" after "Now Poverty" and "Zero Hungry". Also from the total of 17 Sustainable Goals in position 8 are Decent Work and Economic Growth [26].

PhD Tchiki Davis from Berkeley Well-Being Institute considers that well-being is in decline at least in the US. According to her definition Well-being is the experience of health, happiness, and prosperity. It includes having good mental health, high life satisfaction, and a sense of meaning or purpose [19].

The "Future of Work" it is a very recently structured field of thinking where I would like to underline two major facts:

a) "The Future of Work initiative" launched in 2015 by International Labor Organization (ILO) – United Nations Agency and empower with Global Commission on Future of Work launched in 2017 by the same organization and ILO Centenary Declaration for the Future of Work from 2019. The agenda of ILO for Future of Work has 3 pillars: increase investment in people's capabilities; increase investment in the institutions of work; increase investment in decent and sustainable work [17,24].

b) Consultancy services offered on the market to adapt the organizations to the "Future of Work" as in the case of the Deloitte company. Trends such as robots, Artificial Intelligence (AI) in the workplace, dispersed workforces, with people working from anywhere, anytime, and the constant need of employees learning new skills are a part of the fundaments for the future of work services provide for the Deloitte clients. Driven by accelerating connectivity, new talent models, and cognitive tools, work is changing. As robotics, AI, the gig economy and crowds grow, jobs are being reinvented, creating the 'augmented workforce'. Deloitte's services reconsider for their clients how jobs are designed and work to adapt and learn for future growth [17,25].

Figure 1. The Sustainable Development Goals defined by the 2030 Agenda for Sustainable Development, official approved document by United Nations in 2015 [26].

The hottest present debates in the Future of Work area are about AI and the impact on the employment market as the workplaces evolution, unemployment and underemployment rate, individual and household incomes, productivity and the general incomes distribution but also they refer to the

adaptation and the actions to limit the climate changes caused by human actions and not the least, the human's capacity to control the AI [17].

Generations at Work is an initiative, managed by Ergonomics and Workplace Management Society from Romania that should be regarded as a multigenerational platform of work and a debate for a better future of work where to find relevant meaning for humans, in general, aiming to develop better workplace concepts, in particular [17].

Our particular interest, subject also of the research "Generations at Work" are social questions about the meaning of work in the relation with meaning of human life, the relations between global social trends, such as increasing the urbanization, especially in high agglomeration areas cumulated with the aging phenomenon, the rise of single-person households [17,22] and the community nostalgia and action to rebuild communities in a new way [17].

One of the biggest changes in the area of human communities came along with the industrial revolution, when the all human support functions provided by the community were replaced by the rewarding work, paid goods and services provided by private sector or by the new state administration, such as education and health care [10,17]. As consequence, the household started to be more isolated by the community, but the community nostalgia remained and is growing more and more. The research conclusions show that the community spirit is the most important element for the quality of social and human capital [1,7,17,25] also included as key performance indicator for the global organizations [2-5,12,15-18,23,25].

The people are social beings and the consequences of the lack of community spirit, observed in the recent human history, lead now to the situation where the community is strongly revalued, with the main focus on the traditional communities, especially on the idea of sharing resources [15,17,23]. Sharing resources it is also the key concept of the New Economics Models as Circular Economy. The traditional communities' values also refer to sharing of cultural and spiritual values, ideas and emotions. Those are also the key ingredients, along with cultural diversity, for a high level of creativity and innovation, elements considered today the most important for the future performance of the organizations [3,15,17].

Facility management domain development in the direction of the workplace management is a consequence of the organizations needs to develop the all necessary tools, as "New Ways of Working" [17,18,23] and the entire support facilities, to enhance the organization's sense of community and culture, but also to increase innovation, creativity and initiative [2,6,12,14,17].

On the other hand for the human beings, having a meaning of life and work is also an essential need. In the context of AI development this question also a central philosophic question, but also a key question in the "Future of Work" field of thinking. What seems a certainty in future is that, for the humans, the need for the community feeling and meaning of life will be found in the long term in the professional

work organizations [17].

Generations at Work research is motivated by the challenges of the "Future of Work" field of thinking, social integration and considering the business challenges of recruitment and integration of the native digital generation with the today's workplaces in order to find new motivations and meaning of work [17].

2. METHODOLOGY OF THE GENERATIONS AT WORK RESEARCH

The purpose of the "Generations@Work" research is to find solutions for the multi-generations workers' integration with focus on the digital natives' work integration.

The research has been done over 1 year, based on 7 working teams, each one comprised of 7 members. The members of each team are from different generations: high school, students, young employees, mature and senior employees. Each member from each team should to do 7 interviews with people from the same category that are not part of the research. Consequently, this will be a researched with 343 participants and 49 directly involved. In each team, another subject is to self-analyze the group dynamics during the research process.

The research started on the 22nd of February 2019 and first stage has ended on the 28th of June 2019. We have involved in the first stage 44 people on different levels. From the total number, 21 were high school young people, 6 students, 6 young employees (less of 3 years working experience), 7 medium employees (between 3 and 15 years working experience) and 7 senior employees (more than 15 years working experience) [17].

During of the evaluation and team building process, we used three tools [17].
• First, there was a Self Reflection Questionnaire, based on the subject's thinking about different situations from their own life.
• The second one was a questionnaire used to make a quantitative analysis of the different motivators [1,8,12-17] and also a tool to build a personality map, or group map function by task. With this tool, the communication is oriented in one direction and the introspective and extrospective behavior in another direction. This tool was used to build a personal behavioral map but also a team behavioral map.
• The last tool used, was the 5 Whys Analysis applied for two topics: Why we should work and Why we shouldn't work. That tool was also applied individually and as a debate topic for the team.

3. STATISTICAL DATA ANALYSIS

Statistical data analysis is based on the second questionnaire mentioned in the Methodology chapter. The total number of respondents was 111 with the structure from the Table 1.

Table 1. School / working categories [17].

No.	School /working category	No. of respondents
1	High School	20
2	University Student	44
3	Employee with up to 3 years of professional experience	9
4	Employee with professional experience from 3 to 15 years	15
5	Employee with over 15 years of professional experience	23
	Total	111

The questionnaire has 18 topics about work motivation and each responded should make their own hierarchy of priorities, with the most important 10 work or learning motivations. The motivation topics analyzed are in Table 2.

Table 2. Motivation topics [17].

No.	Motivation topic	Code
1	Reward money or school grades	M1
2	Comfort and physical work environment (the building and spaces of the company / faculty / school with the facilities that include cleanliness, security, food facilities, socializing and relaxing spaces, fitness, gaming, ergonomics workstations, training spaces, interior design, natural and artificial lighting, green spaces, etc.).	M2
3	The opportunity to be among people with whom I feel good, have fun, that are my friends	M3
4	The opportunity to be among people from whom I can broaden my horizon of knowledge, skills, and abilities.	M4
5	The opportunity to be in an organization / school from which I can earn / graduate without having to put too much effort, so that I have minimal stress	M5
6	The opportunity to be in an organization / school where I can meet interesting people, different from those that I am used to.	M6
7	The chance to work something to earn my life independently of the direct interaction with other people and that can be work from home or other personal travel, so that I have as much time as possible to do what I like, unhindered.	M7
8	Opportunity to be in a team / organization where I feel appreciated and feel that my worth and contributions are recognized	M8
9	An organization or job / learning activity that will allow me to travel and have different experiences.	M9
10	To live by practicing personal passions	M10
11	A workplace that will allow me enough movement to avoid a sedentary life	M11
12	A workplace post that gives me the flexibility to work both at home and on personal journeys, as well as the opportunity to be part of a team, professional communities in which to share knowledge, experience and to allow my personal development and learning.	M12
13	A psychosocial work / study environment that facilitates and encourages the fulfillment of my personal work / learning tasks.	M13
14	A working / school position that brings me appreciation and prestige between friends and society in general.	M14
15	An organization, workplace that gives me the opportunity to learn and do diverse things that I feel are allowing me to grow.	M15

No.	Motivation topic	Code
16	An organization and / or workplace position in which I feel I can reach my professional vocation and which makes me feel useful.	M16
17	A position in an organization / team / school where I can implement my ideas and projects and to easily mobilize people for working to implement my ideas and projects.	M17
18	An organization / school where to have a life balance between personal time and work time.	M18

3.1. Motivations hierarchies

After the statistical data processing it was obtained the results from Table 3.

Table 3. Motivation Topics General Hierarchy and Each Working Experience Hierarchy [17].

General Hierarchy			Each Category Hierarchy				
No	Code	Topic description	HS	US	EL 3	E3-15	EM 15
1	M10	To live by practicing personal passions	2	1	5	3	8
2	M3	The opportunity to be among people with whom I feel good, have fun, that are my friends	1	2	9	4	5
3	M16	An organization and / or workplace position in which I feel I can reach my professional vocation and which makes me feel useful.	4	8	1	5	2
4	M4	The opportunity to be among people from whom I can broaden my horizon of knowledge, skills, and abilities.	5	3	6	1	1
5	M1	Reward money or school grades	3	4	4	7	4
6	M2	Comfort and physical work environment (the building and spaces of the company / faculty / school with the facilities that include cleanliness, security, food facilities, socializing and relaxing spaces, fitness, gaming, ergonomics workstations, training spaces, interior design, natural and artificial lighting, green spaces, etc.).	6	5	10	8	3
7	M15	An organization, workplace that gives me the opportunity to learn and do diverse things that I feel are allowing me to grow.	8	11	2	2	11
8	M13	A psychosocial work / study environment that facilitates and encourages the fulfillment of my personal work / learning tasks.	14	18	3	6	12
9	M18	An organization / school where to have a life balance between personal time and work time.	12	6	8	9	15
10	M8	Opportunity to be in a team / organization where I feel appreciated and feel that my worth and contributions are recognized	9	12	7	11	6
11	M12	A workplace post that gives me the flexibility to work both at home and on personal journeys, as well as the opportunity to be part of a team, professional communities in which to share knowledge, experience and to allow my personal development and learning.	18	9	11	12	7
12	M9	An organization or job / learning activity that will allow me to travel and have different experiences.	7	10	12	15	16

General Hierarchy			Each Category Hierarchy				
No	Code	Topic description	HS	US	EL 3	E3-15	EM 15
13	M17	A position in an organization / team / school where I can implement my ideas and projects and to easily mobilize people for working to implement my ideas and projects.	16	16	17	10	10
14	M7	The chance to work something to earn my life independently of the direct interaction with other people and that can be work from home or other personal travel, so that I have as much time as possible to do what I like, unhindered.	17	7	18	16	13
15	M11	A workplace that will allow me enough movement to avoid sedentary life.	15	13	13	18	9
16	M5	The opportunity to be in an organization / school from which I can earn / graduate without having to put too much effort so that I have minimal stress	10	14	14	14	14

If we are looking in both top 5 and top 10 general hierarchies and each category hierarchy, we have found more similarities than differences.

However, in a detailed analysis we can identify differences. Thus, in the top 5, we have for Highs School and University students as priorities 2 position items that reflect a prevalent orientation to relaxing items as "live by practicing personal passions" and "the opportunity to be among people with whom I feel good, have fun, are my friends". At the same time on the top of employed people the priorities are related to vocation, the usefulness of work and personal growth in relation to others.
If are looking in top 10, we have the same obvious differences between High School and University Students and especially the employees with more than 15 years of experience. For High School and University Students, the priorities are the ones that provide diversity and flexibility, such as M9 and M12 topics, and also a relaxing orientation, as M5 topic shows. For employees with experience, the organization and team capacity become important, as it helps them to implement their ideas / projects – the M7 item, and also a job that avoids a sedentary life – the M11 topic.

A remarkable issue is the topic M1 – "Reward money or school grades" that has only the 5th position in the top of the general hierarchy and the 4th position the 3 categories, position 3 for high school and position 3 for medium employees experience, 3 – 15 years working category.

3.2. Behavior map

3.2.1. The general map behavior of the entire group of respondents

The general behavior map for the entire respondents' group is presented in Fig. 2 and represents a comparison, with a reference system based on equal values between "tasks" behavior orientation and "relax" behavior orientation on one side and equal values between introvert behavior and extrovert behavior on the other side.

The predominant task behavior is a result of two major influence factors:

a) The all survey participants are people with a predominant work performance behavior, indifferent of the category of work experience because from other groups that are not so performance of work and school orientated we didn't find motivations tools to make them part of the research. This is the reason that one of the respondents' group has also more freedom of choosing their work and for them the "reward money or school grades" is not the first priority.

b) "The social desirability bias" is mostly associated with the answer regarding task orientation and personal development, then with the answer regarding being orientated for relax behavior orientation and "social – economic recognition".

Majority of the tasks items are associated with an introvert behavior and that is the reason that introvert behavior is more predominate also. A more precisely deviation from the equal values between the main behavior orientation (task, relax, introvert, extrovert) is presented in Table 4.
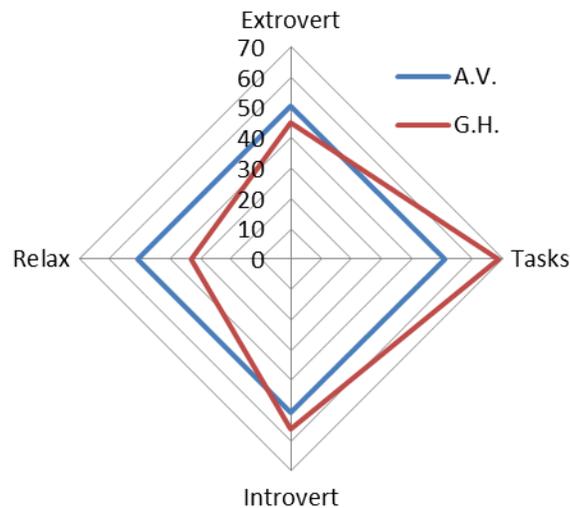

Figure 2. General Map Behavior of the Respondents Group (A.V. - average values, equals values between tasks and relax behavior and between introvert and extrovert values; G.H. – the general values obtained for the entire group of respondents) [17].

Table 4. Deviation from the Average Value of Each Behavior [17].

Behavior	Average Value	General hierarchy value	Deviation (%)
Tasks	51	69	135%
Relax	51	33	65%
Introvert	51	56	111%
Extrovert	51	45	89%

3.2.2. The map behavior of the High School group of respondents

The value of the tasks items for the high school group was lower than the general hierarchy (98%) and also compared to the value of introvert items (93%). The value of relax items was higher than the general hierarchy with 6% and compared to the value of extrovert items with 7%, see Table 5 and Fig. 3.

Table 5. Deviation of the High School Group from the Average Value of Each Behavior [17].

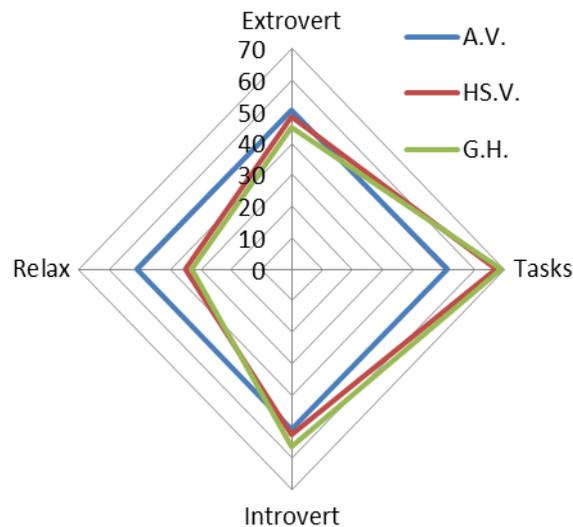| Behavior	General hierarchy value	High School Value	Deviation (%)
Tasks	69	67	98%
Relax	33	35	106%
Introvert	56	52	93%
Extrovert	45	49	107%

Figure 3. High School Map Behavior Group (A.V. - average values, equals values between tasks and relax behavior and between introvert and extrovert values; HS.V. – high school group values; G.H. – the general values obtained for the entire group of respondents) [17].

3.2.3. The map behavior of the University Students group

The value of tasks items for the university students group was lower than the general hierarchy (89%) and also compared to the value of introvert items (99%). The value of relax items was higher than the general hierarchy with 24% and the value of extrovert items with 1%, see Table 6 and Fig. 4.
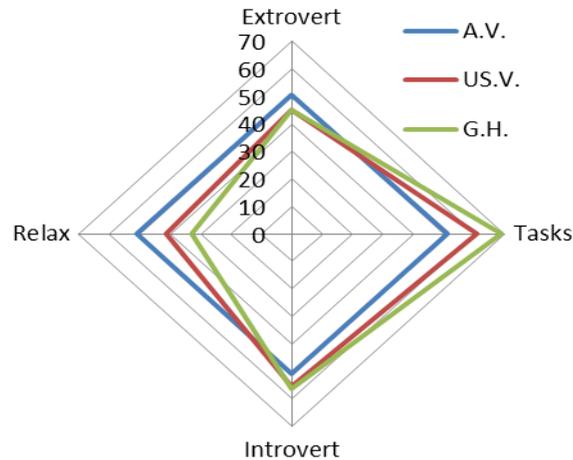
Figure 4. University Students Behavior Group (A.V. - average values, equals values between tasks and relax behavior and between introvert and extrovert values; US.V. – university students group values; G.H. – the general values obtained for the entire group of respondents) [17].

Table 6. Deviation of the University Students Group from the Average Value of Each Behavior [17].

Behavior	General hierarchy value	University Students Value	Deviation (%)
Tasks	69	61	89%
Relax	33	41	124%
Introvert	56	55	99%
Extrovert	45	45	101%

3.2.4. The map behavior of the employees with less of 3 years experience

The value of tasks items for the employees with less of 3 years experience group was higher than the general hierarchy with 7% and the value of introvert items with 6%. The value of relax items was lower than the general hierarchy (83%) and also than the value of extrovert items (93%), see Table 7 and Fig. 5.

Table 7. Deviation of the Employees Less 3 years Group from the Average Value of Each Behavior [17].

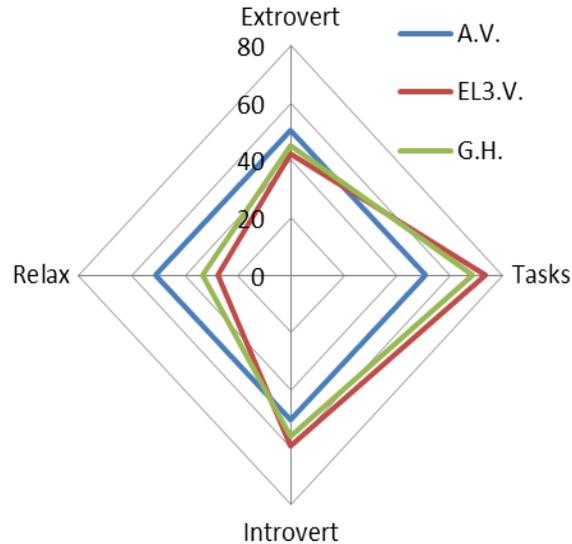| Behavior	General hierarchy value	Employee less of 3 years	Deviation (%)
Tasks	69	74	107%
Relax	33	28	83%
Introvert	56	60	106%
Extrovert	45	42	93%

Figure 5. Employees Less of 3 Years Behavior Group (A.V. – average values, equals values between tasks and relax behavior and between introvert and extrovert values; EL3.V. – employees less of 3 years group values; G.H. – the general values obtained for the entire group of respondents) [17].

3.2.5. The map behavior of the employees with work experience between 3 and 15 years

The value of the behavior items for the employees with work experience between 3 and 15 years group are very close to the general hierarchy values. The values for introvert and extrovert items are the same and the task value items are higher with 2% and the relax items value is lower with 4% as the general hierarchy values.

Table 8. Deviation of the Employees 3-15 years Group from the Average Value of Each Behavior [17].

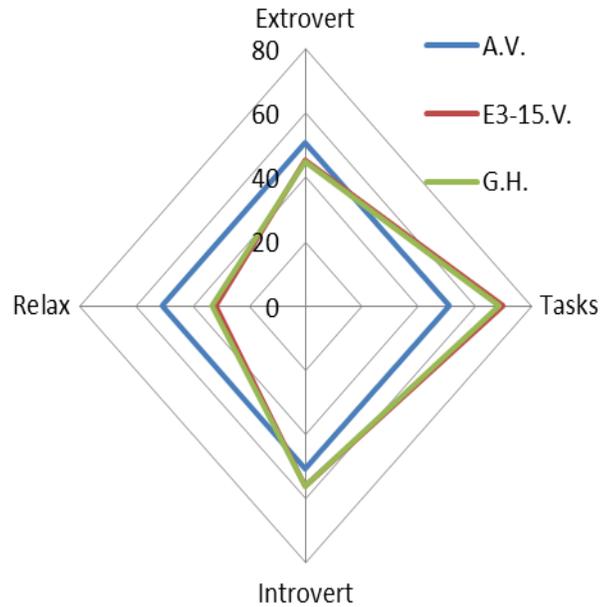| Behavior	General hierarchy value	Employee 3-15 years	Deviation (%)
Tasks	69	70	102%
Relax	33	32	96%
Introvert	56	56	100%
Extrovert	45	45	100%

Figure 6. Employees 3-15 Years Behavior Group (A.V. – average values, equals values between tasks and relax behavior and between introvert and extrovert values; E3-15.V. – employees 3-15 years experience group values; G.H. – the general values obtained for the entire group of respondents) [17].

3.2.6. The map behavior of the employees with more than 15 years experience

The value of tasks items for the employees with more of 15 years experience group was higher as the general hierarchy with 5% and the value of introvert items with 1%. The value of relax items was lower as the general hierarchy (83%) and also the value of extrovert items (93%), see Table 7 and Fig. 7.

Table 9. Deviation of the Employees More of 15 years Group from the Average Value of Each Behavior [17].

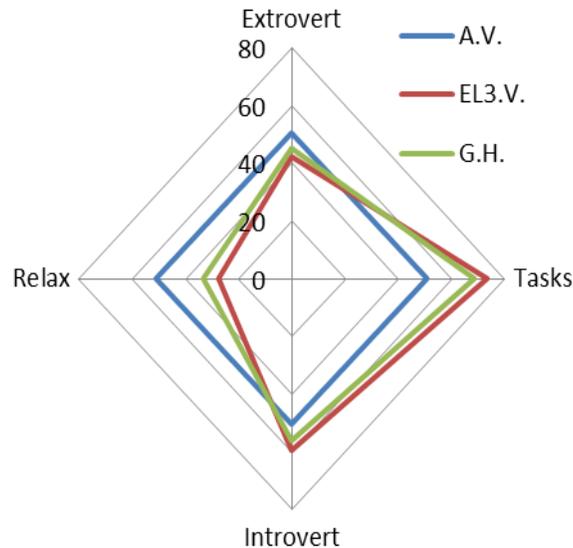| Behavior	General hierarchy value	Employee more of 15 years	Deviation (%)
Tasks	69	72	105%
Relax	33	30	90%
Introvert	56	57	101%
Extrovert	45	44	98%

Figure 7. Employees Less of 3 Years Behavior Group (A.V. – average values, equals values between tasks and relax behavior and between introvert and extrovert values; EM15.V. – employees more of 15 years group values; G.H. – the general values obtained for the entire group of respondents) [17].

4. CONCLUSIONS

The first stage of the project "Generations at Work" shows that actually, the differences in terms of work motivations, are not very different between generations of workers and students but some differences from empirical observations are revealed as a higher orientation for a relaxing behavior in the students' groups. For sure it is necessary for the new digital native generations to reflect and find new and more relevant meanings of work connected with meaning of life [17].

At the same time, the research proves it that it is a possibility to live and work, reflect together, different generations even without a material reward motivation. At the same time the team's cohesion for a longer time didn't work out.

The efforts to understand us better from different generations and to work together with meaning for all is the key success factor to find and build the successful "Future of Work" and humans well-being.

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