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High functioning ASD profile adult employees in global labour markets. ICT supported employment

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Abstract
The present study critically examines the issue of the HF-ASD adult employees' working life shedding light on some of its aspects (e.g., internal developmental difficulties, employment status of neglected candidates, very special characteristics-promoters to meaningful employment) as well as the support provided to the specific population, especially by means of ICT, so as they could overcome obstacles in the job market and manage their career routes.

Keywords: career, employment, profession, High-Functioning Autism Spectrum Disorder (HF-ASD).

Introduction

HF-ASD individuals are classified as a subset of the autism spectrum disorder (ASD) population, who show "normal intelligence with no significant cognitive delay", according to Noterdaeme, Wriedt, and Höhne (as cited in Syvan & Pearlman-Avnion, 2019). It has been observed that they encounter of social interaction character mainly difficulties in the workplace environment than of at required in each profession tasks performance.

Among specific HF-ASD related characteristics of theirs that function as career obstacles for them themselves are their desire for stability in aspects of life, their difficulty in working as members of groups of considerable size or ones comprising unfamiliar co-workers, their limited ability to communicate emotions, and, finally, their oversensitivity to environmental features such as noise, light, smells or other, according to a number of studies as it is stated in Syvan and Pearlman-Avnion (2019). As authors note, every single individual diagnosed as an HF-ASD one neither shows all of the above characteristics nor has by default even one of them to the same level with another person.

Based on these characteristics and, although most of them are high school graduates, they finally end up unemployed, employees having a low-level employment, employed working only a few hours per week, employed with a below-average salary or employed but for not a long period, according to Hillier and Galizzi as well as Nicholas, Hodgetts, and Zwaigenbaum (as cited in Syvan & Pearlman-Avnion, 2019). Furthermore, they are very likely to be "malemployed", as characterized in literature, which means that they work in a completely not-suitable for them job (Baldwin, Costley, & Warren, 2014). Gupta and Chaudhary (2021) underline that the AS1 profile people underperform occupationally. Fried,

Terms AS and HFA were used interchangeably in late 1990s, according to Young and Rodi (as cited in Gupta & Chaudhary, 2021).

Joshi, Kotte, Kagan and Biederman (2013) had already noted years before the above publications that the HF-ASD individuals were a population at risk to be unsuccessful in the modern work environment unless support existed (e.g., accommodations).

For unexpected situations (e.g., in communication, in co-operation) coming about at work settings due to characteristics, as the above mentioned, of the HF-ASD employees, experts have

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thought up, organized and employed intervention programs, with an emphasis especially given to ICT tools, lately, so as obstacles for all the engaged persons in these situations to be overcome. It is instantly recognizable that global labour markets, as have always mainly existed, neither were not still are organized in the proper, inclusive, way, the democratic, finally, one.

As Syvan and Pearlman-Avnion (2019) based on research results state, persons diagnosed with HF-ASD who had been employed in specifically designed for this diagnosis frameworks faced greater formal and organizational issues, since persons diagnosed with HF- ASD who had been employed in regular employment settings faced greater social, communication, and interpersonal difficulties. It is obvious that intervention programs and consequent services (e.g., initial information provision for the HF-ASD people needs at workplace, training for all engaged, real-time support by an expert, a career counselor, a job coach) play vital role for the occupational life of such people.

Such interventions, especially the innovative ones, which offer plenty of support to the specific population are undoubtedly valuable tools for the career counselor professionals. Career experts should be well equipped with the specific knowledge and skills so as to mainly prevent instead of healing problems. Although, it is unfortunate that exactly due to the fact that these interventions have been put into practice lately are not widely known to all career professionals.

Besides the before mentioned characteristics of the population which hinder employment and career development, the HF-ASD individuals carry a number of other, rare and unique characteristics that are also typical of them and can really promote them in the global labour market among many colleagues of theirs. They are very sincere, they work in detail in every task they undertake, they have very strong analytical skills, they do have an excellent long-term memory and they like working following clear rules and guidelines. All these elements transform them into priceless added value for an employer.

Literature Review

A number of studies have approached the topic of the present article but there is still conspicuous lack of research on it. As far as it concerns, according to relevant literature, employment support intervention programs, first of all we refer to the attempt by “Specialisterne”, a company in Denmark (Syvan & Pearlman-Avnion, 2019; Vogeley, Kirchner, Gawronski, van Elst, & Dziobek, 2013). The concept of the intervention has since the beginning been to provide meaningful employment to the neurodivergent persons in general (https://specialisternefoundation.com/about-us/). More specifically, the company focuses on social entrepreneurship, innovative employment models and mindset change services provision so as to promote the neurodivergent talent to the labour market (https://specialisternefoundation.com/specialisterne/).

In addition, analogous attempts have been made by other companies such as “AQA”, “Passwerk” and “Autitalent” in Israel, Belgium and the Netherlands, respectively (Syvan & Pearlman-Avnion, 2019; Vogeley et al., 2013). As far as it concerns the first company, its vision has been to train and integrate people with autistic spectrum disorder profile in software testing tasks (https://www.aqa.co.il/about.html). The “Passwerk” company places great emphasis on the unique qualities of ASD profile people and a normal level of intelligence to provide its services, namely software testing, software development, business intelligence (BI), support processes, Managed Business Process Services (MBPS) to its clients (https://www.passwerk.be/?lang=en). Since the year 2017, the company has expanded its support activities spectrum for the specific population so as other, not of the ICT sector jobs to be, also, investigated for suitability, suggested and, finally, offered to them. Such an example

is the positions of the X-ray screeners offered to candidates at the Brussels airport after having been critically2 supported by the "Passwerk" company in collaboration with the firm G4S. Finally, the "Autitalent", a social enterprise, offers support (e.g., recruitment, selection advice, guidance, training, ensuring suitable working conditions) to diagnosed within the autism spectrum job candidates as well as employers, present or potential (https://www.autitalent.nl). Autism Speaks, an organization founded in the U.S.A. in 2005, is another support "canal" to people receiving an autism spectrum disorder and related conditions diagnosis (https://www.autismspeaks.org/about-us). As far as it, specifically, concerns the employment aspect of life of the target-population, they provide the Workplace Inclusion Now (WIN)™, an evidence-based employment system, which is a suite of resources, either digital or not. Key-

A relevant video is presented on https://www.trplus.be/?lang=en

tools of the system are training, job-sourcing platform, workshops and conferences, recruitment consultation. They address to all directions, job seekers and new employees, employers and communities, so as to, upmost, achieve an appropriate level of working and communication inclusive culture in the global labour market (https://www.autismspeaks.org/workplace- inclusion-now).

A supported employment program (SEP) is developed by Vogeley, Kirchner, Gawronski, van Elst, and Dziobek (2013) for HFA diagnosed persons in Germany, as country was not prepared for such type of help provision to the specific population. The scheme includes three elements: (a) individuals' assessment, (b) on-the-job coaching, and (c) colleagues' instructing about HF-ASD issue. As far as it concerns the first element, it is highly advisable by the creators of the program that a number of tests should be distributed from scratch so as the exact profile of the participants to be captured along with clinical assessment. Testing could, indicatively, include cognitive function tests (e.g., attention, executive functioning, intelligence), a person's vocational profile assessment via distribution of the Autism Work Skills Questionnaire (AWSQ), the aim of which is to achieve a good matching between profiles of a person and a job. The second element refers to a nine - at the maximum- months period of on-the-job training accompanied by a per individual contact per week. Finally, the third element, equally crucial as the previous ones, includes teaching everybody at workplace about diagnostic criteria for the specific condition and training in different ways of successful interaction with the HF-ASD partners, as for example training in needs expression explicitly and in a verbal way or in preparing the proper physical environment so as not the latter to be irritated by noise, lighting, smells or other similar sensory stimuli.

According to Mawhood and Howlin (1999) a very specialized employment support provision program was designed and applied by authors in cooperation with other relevant bodies (e.g., The National Autistic Society, the Employers' Forum on Disability, the Department of Employment) so as to offer help both to initially find a job and prepare for it and then to face difficulties while being employed at a workplace to capable intellectually (IQ

$\geq$ 70 in Wechsler Adult Intelligence Scale (WAIS), no matter the performance or the verbal scale used) adults with a diagnosis of autism, autism spectrum disorder or Asperger's syndrome. Furthermore, support by the program was provided to employers, to-be or existing ones, as well as colleagues or supervisors via education-type actions or information and/or advice giving. As a result of the systematic help was the continuous reduction of the amount of it to only, finally, occasional but planned meetings among the engaged individuals, when required. Additionally, there was significant difference between the supported group and the control group of their comparison study as far as it concerns the paid employment found. Overall, the project is considered successful.

An eight-week intervention program for young adults with high-functioning autism spectrum disorder is described in Sung et al. (2019). The aim of the intervention was to improve

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work-related social skills, which aim was, finally, achieved, according to the research results. For this reason, the Assistive Soft Skills and Employment Training (ASSET) Program was designed and developed for the specific population above and at the end it was evaluated in terms of feasibility and effectiveness. More specifically, groups were formed of participants of relevant educational background and career goals which called for interaction among those members so that the latter could practice program's target-skills while in parallel guidance from group facilitators was provided. Modifications in program execution due to the specific disorder were made, too, as for example video modeling and feedback, visual agendas, content- related images and videos (e.g., video presented examples of proper behavior at work). An optional one-hour of socializing was, additionally, offered so as the participants to have the opportunity to further practise and generalize the learned skills. As far as it concerns the effectiveness of the program to support and promote soft skills improvement, this is plainly affirmed by two participants' common statement that they did noticed such an improvement which in turn made them more capable of enjoying discussions at workplace.

Finally, Strickland, Coles, and Southern (as cited in Anderson et al., 2020) applied the JobTIPS program, an internet accessed training analogously supportive one, offered to individuals with high functioning autism spectrum disorders aged3 specifically between sixteen

(16) and nineteen (19). The intervention program included actions such as theory of mind-based guidance, video models, visual supports as well as virtual reality practice sessions so as appropriate job interview skills to be taught to research subjects (Anderson et al., 2020). Researchers used an interview skills rating instrument - both the response content and the response delivery subscales of it - and the social responsiveness scale (SRS) to measure variables of interest. Treatment and control group comparison showed statistically significant results in interview verbal skills, the response content subscale related ones (Strickland et al., 2013). The program is considered effective.

The cut-off point between adolescence and adulthood was the seventeen (17) years of age (Strickland, Coles, & Southern, 2013).

Critical Analysis

Reviewing relative literature we can see that intervention initiatives, either on paper or implemented ones, address to as many as if not all, to a new, open labour market, a really inclusive one, possible contributors. Diverse working environment seems to be absolutely common necessity. For example, Vogeley et al. (2013) include to their schema both the HF-ASD employees and their, not as such diagnosed, co-workers (see Table 1, p. S199).

Employment supportive intervention actions taken up to now employ both the traditional, face-two-face approach and the technology-based one. Trends lately have been towards the latter. Vogeley et al. (2013) plainly illustrate the significant power of the new media tools for supported employment services provision to the HF-ASD population. Analogous statement for the video tools used in Sung et al. (2019) research is made by the research participants.

Intervention programs recognize more and more the need to focus on adults with HF- ASD, as being a powerful human capital for the global labour market. Previously presented in this study special characteristics of theirs are the crucial variables to be assessed and thoroughly investigated in the frame of such intervention initiatives so as to come up to conclusions about not just the employability but the unique potential and way of processing tasks of this population, an unrivalled workforce.

It is at once identified in research papers that a procedure, more or less strict, is followed with regard to inclusion criteria for the participation in research of respondents to an initial invitation. It is a crucial construct of a research initiative to carefully design and apply processes

so as to certify the eligibility of research subjects, the sample, given the continuous changes in the Diagnostic and Statistical Manual of Mental Disorders editions.

Finally, it is very important that there is a developing legal base that makes the required for the employment support of the specific - among many other groups diagnosed with a disability - population actions compulsory worldwide. The Workforce Innovation and Opportunity Act (WIOA) sets the frame of the actions called for to be done.

The work by Anderson et al. (2020) can be deemed as worthy of attention as being informative about the topic.

Discussion - Conclusions

The incorporation of digital technologies in education and long life learning domain is very productive and successful, facilitates and improves the educational procedures via Mobiles [21-30], various ICTs applications [31-63], AI & STEM [64-75], and games [76-81]. Additionally the combination of ICTs with theories and models of metacognition, mindfulness, meditation and emotional intelligence cultivation [82-105] as well as with environmental factors and nutrition [17-20], accelerates and improves more over the educational practices and results.

It is important additional intervention support programs to be developed so as more and more HF-ASD profile individuals get identified and benefited from career services and employment opportunities of theirs. Labour market, consequently, benefits, too.

Technology evolution can boost research on topic and produce advanced outcomes impacting different aspects of working life (e.g., job seeking process) of the referred population.

Besides private initiatives governments are ought to proceed to permanently designing and applying support programs or other relevant initiatives.

HF-ASD people are a very promising population, though, in dire need of support.

Future Work - Implications

Future work on topic is summarized on two axes, the labour market applications and the research. Enterprises and public sector all around the world should take advantage of the continuously advancing technologies. Research should be conducted so as - beside other research HF-ASD relevant outcomes - all potential this population carries in terms of special skills to be with the relevant documentation revealed publicly as well as ICT employment support tools to be developed to promote their working life, and further their life in general. Work is a human right to exist for all.

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Appendix

Abbreviatio
ns

ASD : Autism Spectrum Disorder

ASSET Program : Assistive Soft Skills and Employment Training

Program AWSQ : Autism Work Skills Questionnaire

BI : Business Intelligence

e.g. : exempli gratia

et al. : et alii

HFA : High-Functioning Autism

HF-ASD : High-Functioning Autism Spectrum Disorder

ICT : Information and Communication

Technology IQ : Intelligence Quotient

MBPS : Managed Business Process Services

p. : page

SEP : Supported Employment Program

SRS : Social Responsiveness Scale

U.S.A. : United States of America

WAIS : Wechsler Adult Intelligence Scale

WIOA : Workforce Innovation and Opportunity

Act WIN™ : Workplace Inclusion Now Trademark