Evaluation of Laboral Insertion Level in Students with Autism Spectrum Disorder Inside Vocational Training Studies

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Abstract
People with autism spectrum disorder (ASD) present a whole of specific needs basically related to specific form of cognitive- perceptive information processing, hence systematized planning of support programs is needful to ease the understanding of perceptual concept and cognitive executive process to system to be effective for encouraging basic curricular competence development along Vocational Training studies. This research recounts people with ASD who carry out Vocational Training studies at local environment and evaluates the competencies acquired and laboral insertion level by students with ASD in Vocational Training studies.
A total of 30 students with ASD shape this study sample, who have completed Vocational Training studies about different cycles: Basic Cycle, Middle and Higher Cycle. Results were carried out throughout Kruskal-Wallis H statistical No- Parametric test (K-W) and are concludes it specific support factors significantly interact over curricular competencies and active laboral insertion of students with ASD.
Key Words *Autism Spectrum Disorder, Specific Support, Vocational Training.*

I. Introduction

Actual situation relating schooling processes of autism spectrum disorder (ASD) students (American Psychiatric Association -APA-, 2013) involve students and their families continuously feel great challenges and defiance along children's transition to adult life, both over academic competences development of different studies and regarding to insertion to working and active life. People with ASD present a whole of specific needs basically related to specific form of cognitive- perceptive information processing (Odom & Wong, 2015; Rogers & McClelland, 2004), that obvious consequences into information perception, coding analysis procedure and recovery, regarding to specific needs related to attention, joint attention and conceptual integration, but, mostly, in coding of semantic memory, which set up information retrieval difficult if specific support isn´t provided to assurance the creation of information links- nodes to facilitate the input perceptive with functional and meaningful criteria. Thereby, the nodes facilitate semantic relations to subsequent retrieval of previously processed information (Simmons & Barsalou, 2003), then, interrelationships between perceptual and functional elements perform an essential role over information encoding and retrieval process, since, according studies of Renzi & Lucchelli (1994) and Wierzbicka (1985), the information retrieval of semantic meaning isn´t based into inferential process, but in relational activation of existing perceptual-functional nodes previously organized within interconcept and intercategorical level, therefore, whatever deficit or limitation into development of systemic interrelationships owing the attributions of concepts´ characteristics over any domains, will set severe difficulty in people with ASD, both for initial encoding, as its recovery, that give a delay regarding learned information recovery, or it perform fragmented and decontextualized shape.

Therefore, systematized planning of support programs is quite needful to ease the understanding of perceptual concept and cognitive executive process to system to be effective for encouraging basic curricular competence development (Plaisted, 2001; Plaisted, Riordan & Baron-Cohen, 1998). In this context, the provision specific support is side essential, but not just any support, rather support teaching must high specifically training inside information processing mode of students with ASD to effectively adjust and adapt the curricular and organizational plans and programs (Johnson, Soares & Gutierrez de Blume, 2021; Tyler & Moss, 1997; 2001; Tyler, Moss, Durrant-Peatfield & Levy, 2000).

In this sense, students with ASD make up a highly vulnerable population they need adequate educational alternatives endowment to assurance the academic and/ or professional training, in which professional training, especially Basic Cycle Formation Professional constitute an effective setting to continue the comprehensive training of individuals with ASD, both preparation for active life and to continue other studies, since it make up a structured education in transversal modules integration of different learning areas. Basic Cycle Formation Professional is intended for students are 15 or 16 years old, completed 3rd year of obligatory secondary education or, exceptionally, 2nd year, owing their specific support needs, it´s advisable this curricular option to continue formal academic and professional training. Structural organization of Basic Cycle modules is structured according to competency units of National Catalogue of Professional Qualifications and common learning blocks, which correspond to following areas: I) communication and society, and II) applied sciences; in order facilitate the transition to active life or let their continuity in formal educational system regarding other studies. According to actual norms, Basic Cycles lets adapt following flexible organizational structure: 1) the timing and distribution of modules through several courses and, exceptionally, it may also carry out: 2) a fragmentation of modules into two or three courses. However, if individuals need involve most specific response, it´s possible develop also a specific curricular adaptation and other specific organizational and didactic measures.

Ojea (2020) affirms that Basic Cycle can constitute, indeed, a right alternative to facilitate academic and professional development of students with specific educational support needs, but to secure it a holistic vision of current normative situation must carry out, which allow linking within basic organizational structure these educational measures, both organizational and curricular, to provide the previously assessed needs of students with ASD. Likewise, effective results over these studies, in propose of respond the student diversity, implies must consider all ordinary educational material and human resources, as well as, when these resources prove insufficient, it would apply following extraordinary measures: 1) curriculum fragmentation, 2) partial or total curricular adaptation, and 3) provision of specific human support resources to facilitate teacher support and support individual specific curriculum process.

Similar measures are also observed along international ambit. Thus, the evolution of legislation on education and disability implies an important step towards promoting greater opportunities for people with disabilities to perform and complete other studies higher (Brett, 2016). In this way, educational policy based on global inclusive approach allows more students with several specific needs, particularly regarding to students with ASD, can access to different formal official studies (Barnhill, 2016; Bell, Devecchi, McGuckin & Shevlin, 2017; Brock, Huber, Carter, Juarez & Warren, 2014; Center for Disease Control and Prevention, 2018).

Therefore, Vocational Training and, especially, Basic Cycle Vocational Training conform a very outstanding adaptable itinerary to facilitate the transition and insertion to active life of students with ASD. For this reason, this research reply the following specific **aims**: 1) recount people with ASD who carry out Vocational Training studies at local environment, 2) evaluate the skills acquired level by students with ASD in Vocational Training studies, 3) evaluate the insertion to active life of individuals with ASD who realized Vocational Training studies, 4) analyze factors that assume to development of curriculum competencies in students with ASD, and 5) analyze the influential factors over socio-occupational insertion of students with ASD who Vocational Training studies completed.

II. Method

Participants

A total of 30 students with ASD shape this study sample, who have completed Vocational Training studies about different cycles: Basic Cycle, Middle and Higher Cycle. Sample is made up autism spectrum disorder different degrees (APA, 2013). This sample refers a local people laid in Spain northwest, hence sample has just local representative character, which requires No-Parametric data analysis.

In Table 1 can see contingency crossing obtained chipboard to *Sex * Vocational-Training * Level * Age.*

Table 1: Sample (N= 30).

Age	Level			Vocational-Training			Total
				Basic Cycle	*Mid Cycle*	*Higher Cycle*	
14-16 years	ASD1	Sex	guy	1	1		2
		Total		1	1		2
17-19 years	ASD1	Sex	guy	15	5	1	21
			girl	1	0	0	1
		Total		16	5	1	22
	ASD2	Sex	guy	1			1
		Total		1			1
20-22 years	ASD1	Sex	guy	0	2		2
			girl	1	0		1
		Total		1	2		3
>22 years	ASD1	Sex	guy		1		1
			girl		1		1
		Total			2		2
TOTAL				**19**	**10**	**1**	**30**

As can be seen, sample is made up of 19 students who course Basic Cycle, 10 the Mid Cycle and 1 student into Higher Cycle (N= 30), of which 28 guys and 2 girls. Regarding ASD´ degree, 29 students belong ASD-1 degree and just 1 student belongs to ASD-2 level.

Research design
This design is experimental study based on data found from Questionnaire application of several answer alternatives. Owing limited sample regarding cases number (Cronbach's Alpha reliability level= .61) for whole 14 analysis items, this data found are analyzed through No-Parametric tests, which show greater sensitivity for small samples.

Variables
The study is made up the analysis of 14 elements- variables, of which *Competencies* and *Laboral-Insertion* variables been considered dependent variables (VD) of study studied separately. All other study variables are considered explicative factors or independent variables (IV).
Table 2 shows the name and content of each variable.

Table 2: Study variables.

	Variables	Variable contents
1.	*Sex*	Students´ sex.
2.	*Age*	Students´ age.
3.	*Level*	Disorder level according to DSM-5 International Classification (APA, 2013).
4.	*Comorbidity*	Other associated disorders.
5.	*Vocational-Training*	Vocational Training Cycle type.
6.	*Protocol*	Specific Protocol officially established for students with ASD is followed.
7.	*Support-Teacher*	Specific support teacher for students with ASD is provided.
8.	*Support-Other*	Support of other not specialist teachers of center is provided.
9.	*Curriculum-Reinforcement*	Educational support and curriculum reinforcement measures are carried out.
10.	*Specific-Support*	Specific complementary supports related to specific needs of students with ASD are carried out.
11.	*Class-Method*	Teaching- learning methodology type used in class context.
12.	*Assessment*	Competencies evaluation shape.
13.	*Competencies (DV)*	Level of acquired curricular competencies.
14.	*Laboral-Insertion (DV)*	Laboral insertion level.

Data analysis
Results have been analyzed through SPSS statistical processor. Following tests found: 1) Contingency Table for Sex*ASD degree*Age*Cycle type*, 2) Descriptive Statistics analysis, 3) No-Parametric Chi-Square analysis, 4) Frequencies and Percentiles to both DV, and 5) H Kruskal-Wallis (KW) analysis to both DV separately.

III.   Results

Descriptive statistical data can be seen in Table 3. Data analyses give highlight that *Support-Teacher* variable presents a standard typical deviation regarding to mean equal zero ($\sigma= 0$), which indicates it´s constant variable throughout this study range, that´s along whole study are encoding with lack of specific support teachers for reinforcement of students with ASD in all schools surveyed; while in *Comorbidity* variable presents greater standard typical deviation differential relating to study mean: $\sigma= 1.21$. *Level* variable presents very short differentiation ($\sigma= .18$), owing disorder level of students with ASD studying Vocational Training corresponds to 29 ASD-1 students and just 1 student belong the ASD-2 level, while there aren´t ASD-3 level participants.

Table 3: Descriptive Statistics (N= 30).

Variables	μ	σ
Sex	.10	,30
Age	1.16	.64
Level	.03	.18
Comorbidity	1.20	1.21
Vocational-Training	.40	.56
Protocol	.90	.30
Support-Teacher	2.00	.00
Support-Other	1.20	.55
Curriculum-Reinforcement	.63	.80
Specific-Support	.83	.64
Class-Method	1.70	.65
Assessment	1.60	.49
Competencies	.93	.63
Laboral-Insertion	.66	.80

Chi^2 frequencies analysis for No-Parametric tests, which is motivated by short reliability found of analysis, it highlights constant data, constant in *Support-Teacher* variable (Chi^2= constant), which doesn´t present variability throughout whole study. Other critical indicators are adjusted to data estimable frequencies for all the variables, but over *Specific-Support* variable (sig= .14), *Assessment* variable (sig= .27) and *Competencies* variable (sig= .06).

Regarding people means analysis, the frequencies and percentage (p) analysis is carried out for two DV: *Competencies* and *Laboral-Insertion*. About *Competencies* variable, 23% of students (n= 7) have acquired good level skills along Vocational Training studies, while 60% (n= 18) have acquire middle level competencies and 5 low level (16.7%). *Insertion- Laboral* variable is highly achieved by 53.3% (n= 16), on middle 26.7% (n= 8), while 20% don´t present any insertion socio- laboral or their insertion is very low (n= 6). Hence, these data justification regarding study variables, variance ANOVA analysis is analyzed for No-Parametric tests, which are more sensitive and effective for small studies.

In this sense, incidence analysis of factors above dependent variables has been carried out throughout Kruskal-Wallis H statistical test (K-W).
Table 4 data correspond to dependent variable: *Competencies* (competences acquired by students with ASD).

Table 4: K-W for DV: *Competencies*.

Variables	Chi- Square	Sig.
Sex	3.51	.17
Age	4.92	.85
Level	5.00	.82
Comorbidity	1.46	.48
Vocational-Training	.27	.87
Protocol	.69	.70
Support-Teacher	.00	1.00
Support-Other	7.80	.02
Reinforcement	13.97	.00
Specific-Support	11.79	.00
Class-Method	1.55	.46
Assessment	8.70	.01
Laboral-Insertion	13.76	.00

Df= 2.

Indeed, a significant incidence is observed to *Competencies* variability scores regarding variables *Other-Support* (sig= .02), *Reinforcement* (sig= .00), *Specific-Support* (sig= .00), *Assessment* (sig = .00) and *Laboral-Insertion* (sig= .00), while other variables-factors of this study don´t prove explicative variance data related the changes found for 2 degrees of freedom of statistical analysis. Related Basic Cycle, 4 students achieved a good level competency, 11 a middle level and 4 with a low level, in Middle Cycle, 3 students obtained a good level and 7 achieved a middle level, while 1 student belong Higher Cycle get competencies low level.

Regarding next DV: *Insertion-Laboral*, incidence data can see over Table 5.

Table 5: K-W for DV: *Insertion-Laboral*.

Variables	Chi- Square	Sig.
Sex	2.81	.24
Age	.39	.81
Level	4.00	.13
Comorbidity	.44	.80
Vocational-Training	.95	.61
Protocol	2.81	.24
Support-Teacher	.00	1.00
Support-Other	8.98	.01
Reinforcement	21.52	.00
Specific-Support	15.72	.00
ClassMethod	3.14	.20
Assessment	15.82	.00
Competencies	14.17	.00

Df= 2.

Data suggest significant explicative incidence in *Laboral-Insertion* variable owing variables *Support-Other* Teachers (sig= .01), *Reinforcement* (sig= .00), *Specific-Support* (sig= .00), *Assessment* (sig= .00). 00) and *Competencies* (sig= .00), while other variables don´t exhibit significant explicative critical level for changes found second DV, for 2 freedom degrees over 14 analysis items. According to cycles type, it found high laboral insertion at 10 students corresponding to Basic Cycle, 6 in Middle and 0 in Superior Cycle, while laboral insertion has been middle level at 4 students of Basic Cycle, 4 of Middle Cycle and 0 in Superior Cycle. Insertion Laboral data are lower in 5 students belong the Basic Cycle, 0 the Middle Cycle and 1 in Superior Cycle.

IV. Conclusions

Considering these data with precaution owing small sample founded, following synthesis of experimental data can be made. Variability over VD *Competencies* and *Laboral-Insertion* find significant interrelations itself, hence whenever *Competencies* variable is analyzed through K-W test, *Laboral-Insertion* variable offers significant incidence: Chi^2= 13.76 (sig= .00), while, when *Laboral-Insertion* is analyzed by K-W test, *Competencies* variable suggests significant incidence: Chi^2= 14.17 (sig= .00). These results allow deduce it there´s hard relationship between both variables. Likewise, variability in two DVs is significantly influenced by same factors or IVs of this study: *Support-Other, Reinforcement, Specific-Support* and *Assessment*, which

implies the common support factors importance to improve the effectiveness of Competences and Laboral-Insertion variables along Vocational Training studies in students with ASD.

But, regarding this conceptual theme conceptual there is an fundamental conflict regarding to Vocational Training studies, then being reinforcement and specific mediated supports decisive elements for effectiveness of studies intended to specific educational support needs students, specially, individuals with ASD; however, all surveyed centers there isn´t provision of specific support staff well trained for provide it, which observed over constant value of *Support-Teacher* variable (Chi2= .00, sig= 1.00). This situation is corrected through support of other teachers the center (*Support-Other* variable), as well as with ordinary measures regarding curricular support methodology and combined assessment between exam and continuous evaluation. In synthesis, 23% of students with ASD get high level in curricular *Competencies* acquisition, of which 4 belong to Basic Cycle and 3 to Superior Cycle; 60% of students scope the basic curricular *Competencies* with middle level, of which, 11 belong to Basic Cycle and 7 to Middle Cycle and finally and 16.7% achieve a low level, 4 belong to Basic Cycle and 1 to Superior Cycle.

Laboral- Insertion levels scope 53.3% regarding good insertion in active life, which 10 students belong to Basic Cycle and 6 to Middle Cycle; *Laboral-Insertion* half levels are 26.7%, of which 4 belong to Basic Cycle and 4 to Middle Cycle; and, at last, *Laboral-Insertion* low level in 20% is found, of which 5 belong to Basic Cycle and 1 to Superior Cycle. It´s obvious these results would improve substantially if there´re an effective provision of specialist support teachers with specific knowledge about perceptive cognitive system functional development of students with ASD.

This is paradoxical situation, therefore, if main of students ASD studying the Basic Cycle Vocational Training (n= 19, *p*= 63.3), which is guiding as alternative for those students who owing several specific needs, minimum competencies over official curriculum of Obligatory Secondary Education haven´t achieved, since Basic Cycle Vocational Training forms a most adjusted educational itinerary to facilitate the educational recovery of these students and, therefore, their Laboral-Insertion to active and adult life. However, it isn´t provided necessary specific support resources to respond effectively and efficiently to diversity of students with ASD. This is key aspect because regarding previously indicated percentages of achievement in Competencies and Laboral- Insertion, there are students who fail in Basic Cycle and must let their studies. These students now don´t find specific educational alternatives in educational scope and/or their laboral and professional insertion, thus, regarding lack of achievement of competencies is laid 21% of students the Basic Cycle; and, regarding laboral and professional insertion is laid 26.3% of students with ASD the Basic Cycle, who are left without specific alternatives within the official curriculum.

Considering these data with precaution owing small sample founded, it´s urgent specific support measures are taken through support teacher provision to improve the curricular and insertion laboral scores in Vocational Training centers in agreement with specific educational needs of students with ASD.

V.   Discussion

Specific training effectivity to facilitate support process is quality assurance of educational system, in which involvement, preparation, formation and attitude of teaching is fundamental, both specific support teacher and regular teacher regarding specific needs of students with ASD (Abel et al., 2015). Also, Segall & Campbell (2012) show that there´s significant relationship between teacher attitudes, necessary strategies knowledge and formation over functional system in students with ASD, which improves self-confidence and curricular and professional development of students.

Hence, without educational and social inclusion there isn´t optimal development or suitable intervention for students with disabilities. It´s necessary prioritize attention to student diversity, assess their specific needs and provide effective response, which is parallel to teacher provision and preparation in order promote inclusive education for people with ASD (Brock, Huber, Carter, Juarez & Warren, 2014; Chung et al., 2015 y Paynter & Keen, 2015).

Howorth, Rooks-Ellis, Flanagan & Wook Ok (2019) present curricular experience of a Marcus case study, who studying Vocational Training. Marcus has comprehension difficulties in learning process, so receives specific support related with several and different visual-auditory learning stimuli to keep its understanding. Throughout this teaching- learning process, the support specialist teacher probe different ways to get it. Therrien (2004) and Vrasidas & Glass (2010) research the use of new technologies to facilitate access to basic curriculum by video-modeling method, linked to augmentative actual technological applications or Augmented Reality. Indeed, current research show if students receive support based on perceptive- cognitive informative processing highly different way regarding representation of content and expression, most significant semantic memory nodes are produced, hence, later, it´s easier remind this information and apply about curricular content. Rose, Gravel & Domings (2012) affirm that conceptual comprehension in students with ASD is facilitated throughout the combined use of video-modeling, speed reading, concept segmentation, text

learning combination and, above all, comprehension self-assessment strategies teaching through specific mediated support.

Koegel & Koegel (2006) propose a supporting methodology based multiple answers to learning stimuli and several conceptual questions related, introducing tasks varied and using multiple and different assessment process. In this context, students own a great answers variety, which is basic aspect to promote individual affective motivational processes owing this teaching- learning method reduce answer negative frequency issued along learning process, since motivation will influence interactively in whole perceptual-cognitive system. This executive process is logically carried out by teachers who are highly specialized over psycholinguistic processes characteristic students with ASD (Koegel, Matos- Freeden, Lang & Koegel, 2011), whose aim is influencing the development regarding five fundamental areas: 1) multiple responses capacity in several learning contents, 2) intrinsic motivation strengthen, 3) encourage student self-management, 4) develop the learning process self-initiation, and 5) promote the interactive participation of students' family through autonomous educational management own along educational development process of their kids.

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