

# A descriptive survey on Applied Behavioral Analysis: a sample of Italian teachers

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## Abstract

Intervention proposals based on the applied behavior analysis (ABA) model are frequently mentioned as the only proposal evidence-based. ABA based programs demand detailed assessment of environmental factors and their interference on the ASD child's behavior aiming to identify determinants of behaviors and factors that will probably lead to their repetition. ABA programming follows the general guidelines for effective intervention for children who have autism spectrum disorders. The research field of behavioral treatments has also looked into the effectiveness of ABA therapy in helping children with any developmental disorder. The sample consists of 1000 Italian teachers from all of grades and levels of education and the purpose was to investigate their acknowledgment of "the Applied Analysis of Behavior". Our descriptive analysis shows how important it is to have more in-depth knowledge of the ABA because it aims to be the "gold standard" of behavioral interventions. Such an intervention can be done since very early childhood and progress is widely recognized.

## Keywords

teachers; applied; behavioral; analysis; ABA; model; intervention.

## 1. Introduction

Educational and therapeutic proposals directed towards persons with autism spectrum disorders (ASD) have been the object of debates disregarding or demeaning scientific evidence about their efficiency and social validation [1,2]. Intervention proposals based on the applied behavior analysis (ABA) model are frequently mentioned as the only proposal evidence-based [2,3]. ABA based programs demand detailed assessment of environmental factors and their interference on the ASD child's behavior aiming to identify determinants of behaviors and factors that will probably lead to their repetition [2,4]. Programs frequently include verbal and communication abilities in intensity intervention levels that are similar to those directed toward cognitive and academic abilities and to behavior disorders [2,4].

ABA programming follows the general guidelines for effective intervention for children who have autism spectrum disorders [5,6]: intervention should be started at the earliest possible age and it must be intensive; parent training and support are crucial; intervention should focus on social and communication domains and it should be systematic, built upon specific goals. It is very important that effective intervention emphasize generalization. ABA programming also incorporates all of the factors

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identified by the US National Research Council [7] as characteristic of effective interventions in educational programs for children who have autism.

Parents' involvement, allowing a more intensive stimulation in home environment is frequently mentioned as one of the positive points of ABA intervention proposals (8,9).

Quality educational programs for children who have autism rely heavily on ABA principles [10]. Effective school programs share several characteristics [11]: their interventions are based upon empirical evidence of effectiveness and are highly structured.

They do functional assessments and behavioral assessments of challenging behaviors, employ specificity in the development of objectives, have operationally de-fined targets, have criteria for the achievement of instructional objectives, feature the systematic use of instructional prompts, and have objective and ongoing measures of progress. [11].

Applied Behavioral Analysis (ABA) is an approach integrated as a core skill in applied and health psychology programs and it is considered a practice in psychology that is well-grounded in psychological science and evidence-based practice [12]. Granpeesheh et al. [13] presented the effectiveness of ABA in children with ASD. ABA therapy has demonstrated significant results in multiple areas, including academics, social functioning, independent living skills, vocational skills, challenging behaviors, and feeding disorders. This clearly exhibits how extensive ABA therapy is in aiding and supporting the growth and development of children with SEN. On top of this, the results achieved through consistent ABA therapy are not limited to children with ASD. The research field of behavioral treatments has also looked into the effectiveness of ABA therapy in helping children with Attention Deficit Hyperactivity Disorder (ADHD). The success of behavioral interventions such as ABA therapy are also re-searched and demonstrated in groups of children with other intellectual or develop-mental disorders such as intellectual disability [14] and Down syndrome [15], making ABA therapy a viable option for children with different SEN.

The field of application of Applied Behavioral Analysis related to neurodevelopmental disorders is represented mainly by educational intervention. However, in some countries including Italy Applied Behavioral Analysis is identified only as a health intervention.

The purpose of this study was to investigate how Italian teachers from all of grades and levels of education know "the Applied Analysis of Behavior" using an online questionnaire. In addition, the questionnaire aims to highlight how teachers consider useful to master the basic principles of the ABA for the structure of educational programs. The data collected testify how the placement of ABA interventions is twofold: educational and health.

## **2. Materials and methods**

The sample consists of 1000 Italian teachers randomly selected from all over the Nation. Specifically, the sample consisted of: (a) teachers from all over Italy, (b) ordinary and support teachers, (c) teachers from kindergarten to high school. The sample consisted of 877 females and 123 males teachers. The data were collected by the Centre for Research on Disability (DRC) of the University of International Studies in Rome using an online questionnaire structured by qualified psychologists.

### **2.1 Instruments**

Online questionnaire: to investigate how well teachers know the "Applied Analysis of Behavior". In addition, the questionnaire aims to highlight how useful teachers consider it useful mastering the basic principles of the ABA for the structuring of educational programs of behavioral modification. The last questions of the questionnaire concern the Italian school system and it assesses how this is ready to take advantage of special behavioural education strategies to make school contexts truly inclusive. The questionnaire was divided into three sections as shown in Table 1.

**Table 1 – Questionnaire sections, items and answers**

Sections	Items	Answers	
1	1	Sex	M or F
	2	Age	18-30; 31-45; > 45
	3	School grade	kindergarten; primary school; middle school; high school
	4	Years of employment	<5; 5-10; 10-20; >20
	5	Job position	Ordinary; support teacher
	6	Location	North; Centre; South
2	1	In your opinion, what is the most problematic area for ASD in the educational context?	Spontaneous Communication, Socialization and Integration with Peers, Regulation of Behaviour, Development of New Learning
	2	In your opinion, in Behavioral Disorders, what is the main difficulty that teachers face?	Lack of operational tools made available by the school, Lack of previous specific training, Lack of collaboration between colleagues, Lack of collaboration with the family and rehabilitation facilities
	3	What is the main facilitation that the school system could provide to a student with ASD and/or other Behavioral Disorder?	Specialized support teachers exclusively dedicated to the student with disabilities, Specific teaching tools and aids, Integration of the educational network, Specific university training for teachers with references not only theoretical but also practical
3	1	Have you had the opportunity to deepen the study of the ABA through university or ministerial educational proposals?	Yes or No
	2	What are the main sources that have allowed you to approach the ABA?	Educational Websites, Postgraduate Training Courses, University Education, Social and Health Workers of Pupils with Autism Spectrum Disorder, None at the moment
	3	How useful would a systematic application of ABA principles in the school context be in support of teaching and behavioural management of pupils with disabilities?	Little, Enough, Very, Absolutely indispensable
	4	According to your knowledge, which of these elements can be used effectively in the school context?	Functional Behavior Analysis, Augmentative Communication Alternative ( PECS , Signs, Communicators), Educational Covenant and Behavioral Contract, Reinforcement and Token Economy, All the elements described above, Uncertain
	5	In the case of ABA students, how useful is collaboration with other team members?	Little, Enough, Very, Absolutely indispensable
	6	In your opinion, how useful are detailed monitoring of pupil changes and constant recalibration of objectives?	Little, Enough, Very, Absolutely indispensable
	7	Can you identify in which area students with Autism and/or other Behavioural Disorders could show most improvement through the use of ABA methodologies?	Spontaneous Communication, Socialization and Peer Integration, Behavior Regulation, Cognitive and Academic Skills, Global Adaptive Functioning with Inclusion of All Mentioned Areas
	8	In your opinion, which element hinders the most the diffusion of Behavioural Pedagogy and therefore the systematic application of the ABA Methodology in the School Context?	The prejudice that the ABA is a health treatment, The lack of specific training for teachers, The lack of responsiveness of the school context to the issue, all the previous

### 3. Results

The data analysis was based on response rate of participants at the online questionnaire.

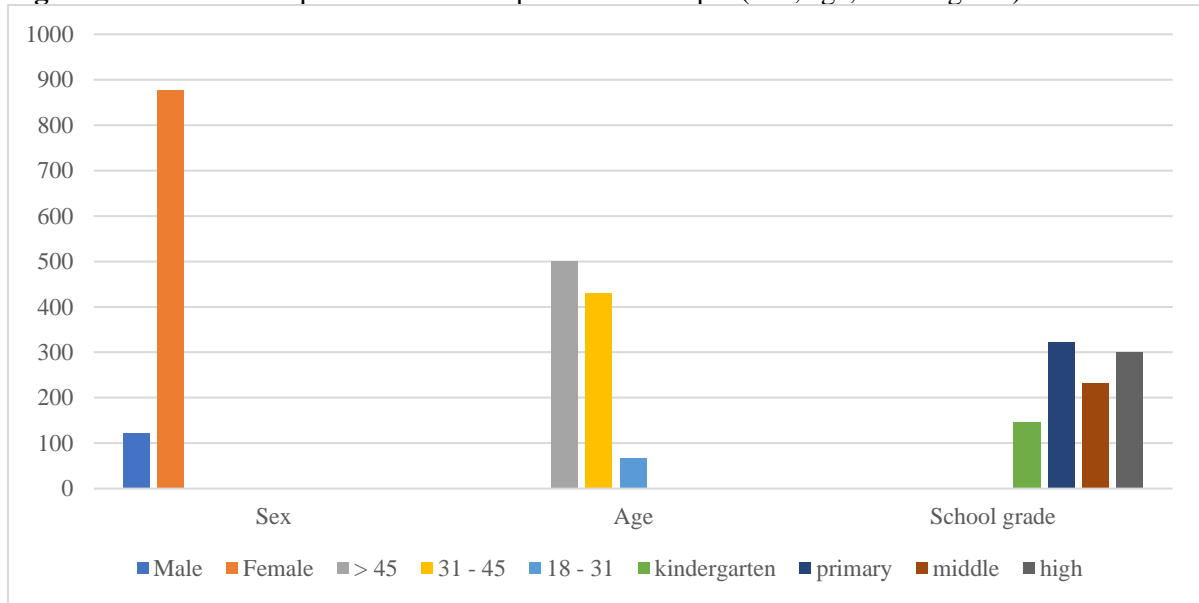
Based on the answers the sample section 1 consisted in: 877 females and 123 males teachers; 501 teachers were > 45 years old, 431 from 31 to 45 years old, 68 from 18 to 31 years old. In addition, 145 worked in kindergarten, 322 in primary school, 233 in the middle school, 300 in the high school. This is reported in Figure 1a.

We found that 356 teachers have worked for less than 5 years, 228 from 5 to 10 years, 202 from 10 to 20 years, 214 more than 20 years. Specifically, the sample was divided into 405 ordinary teachers and 595 support teachers and 261 came from North, 358 from the Centre and 381 from the South of Italy. This is reported in Figure 1b.

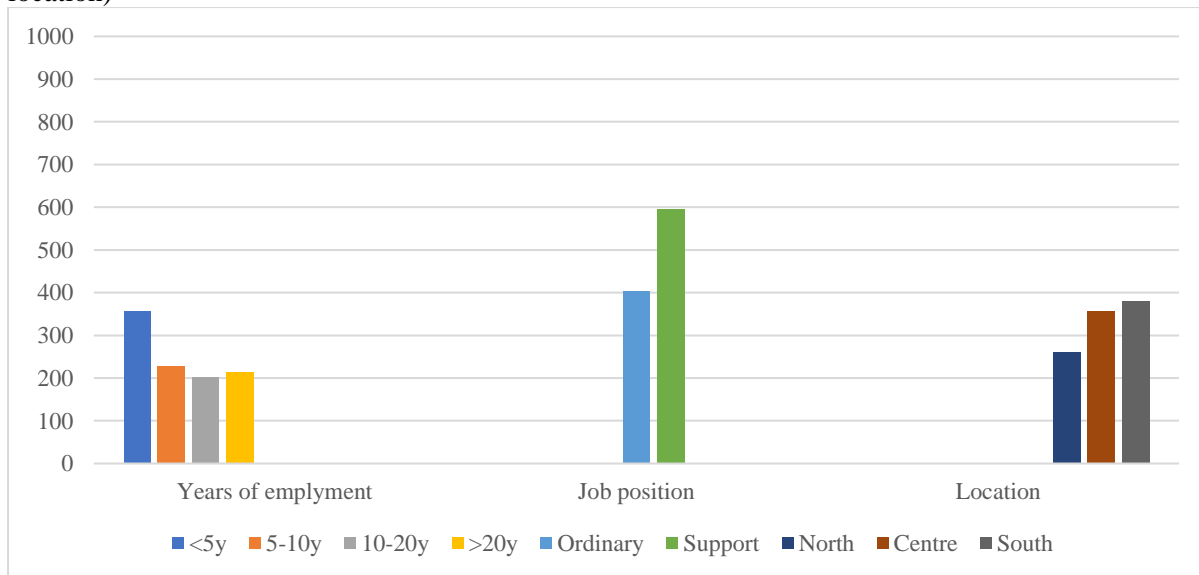
About the section 2: teachers answered (495) that the most problematic area for ASD in the educational context was socialization; followed by (321) regulation of behavior, (124) Spontaneous Communication and at least (60) Development of New Learning. Moreover, as shown in Figure 2, teachers answered (431) that the main difficulty that teachers face was lack of previous specific training; Followed by (293) lack of operational tools made available by the school, (168) lack of collaboration with the family and rehabilitation facilities, (108) lack of collaboration between colleagues. Furthermore, teachers answered that the main facilitation that the school system could provide to a student with ASD and/or other Behavioral Disorder was (345) specific university training for teachers with references not only theoretical but also practical, (228) specialized support teachers exclusively dedicated to the student with disabilities, (219) specific teaching tools and aids, (208) integration of the educational network.

About the section 3: as shown in Figure 3a, the main part of the sample (630) was not able to deepen the study of the ABA through university or ministerial educational proposals and the main sources that have allowed teachers to approach the ABA were (318) none at the moment (227) Postgraduate Training Courses, (219) Educational Websites, (143) Social and Health Workers of Pupils with Autism Spectrum Disorder, (93) University Education. In addition, the main part (473) of the teachers believed that a systematic application of ABA principles in the school context be in support of teaching and behavioral management of pupils with disabilities was very useful. In their opinion (577), the elements that can be used effectively in the school context were all over the answer (Functional Behavior Analysis, Augmentative Communication Alternative, Educational Covenant and Behavioral Contract, Reinforcement and Token Economy). The main part of the sample (499) found indispensable collaboration with other team members. The main part of the sample (434) believed that de-tailed monitoring of pupil changes and constant recalibration of objectives was very useful. Teachers (494) answered that students with ASD and/or other Behavioral Disorders could show most improvement through the use of all ABA methodologies in global adaptive functioning with inclusion of all areas, as shown in Figure 3b (Spontaneous Communication, Socialization and Peer Integration, Behavior Regulation, Cognitive and Academic Skills). Moreover, in their opinion the element hinders the most the diffusion of Behavioral Pedagogy and therefore the systematic application of the ABA Methodology in the School Context was the lack of specific training for teachers (Figure 3c).

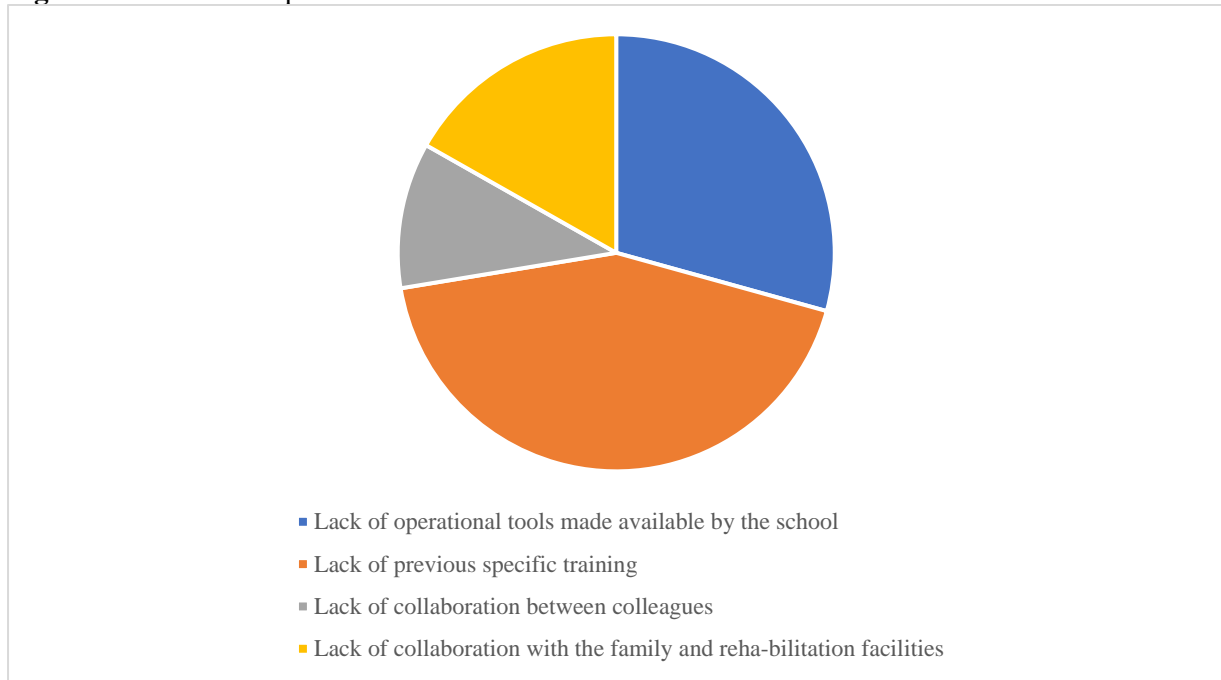
**Figure 1a.** Section 1 of questionnaire: composition of sample (Sex, age, school grade)



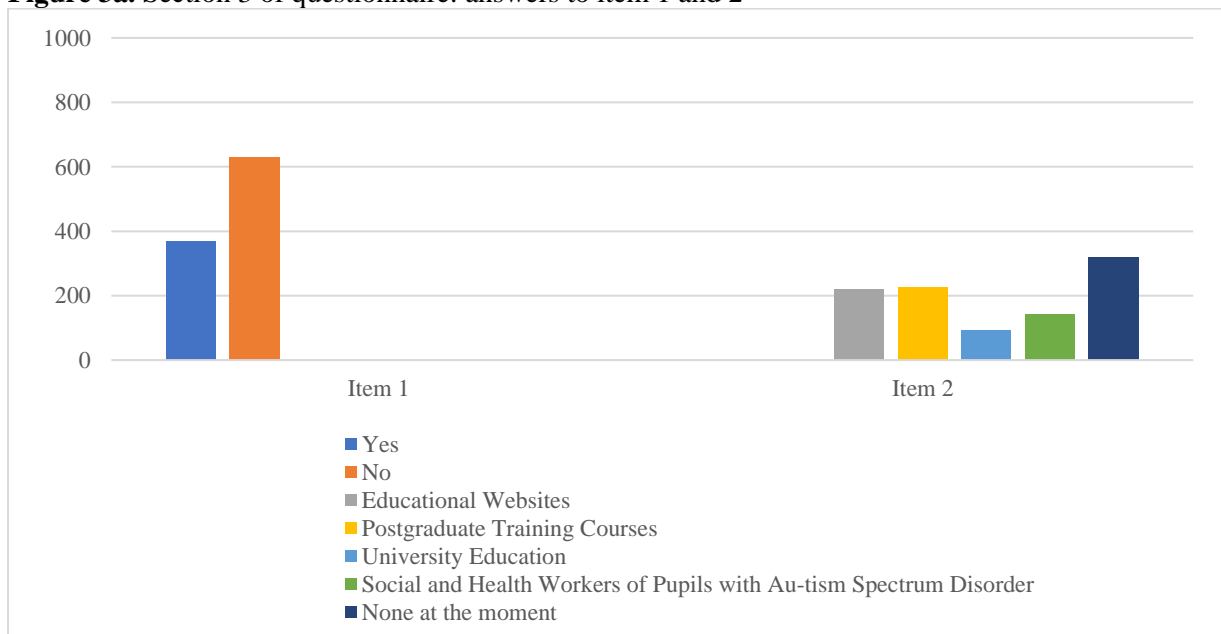
**Figure 1b.** Section 1 of questionnaire: composition of sample (years of employment, job position, location)



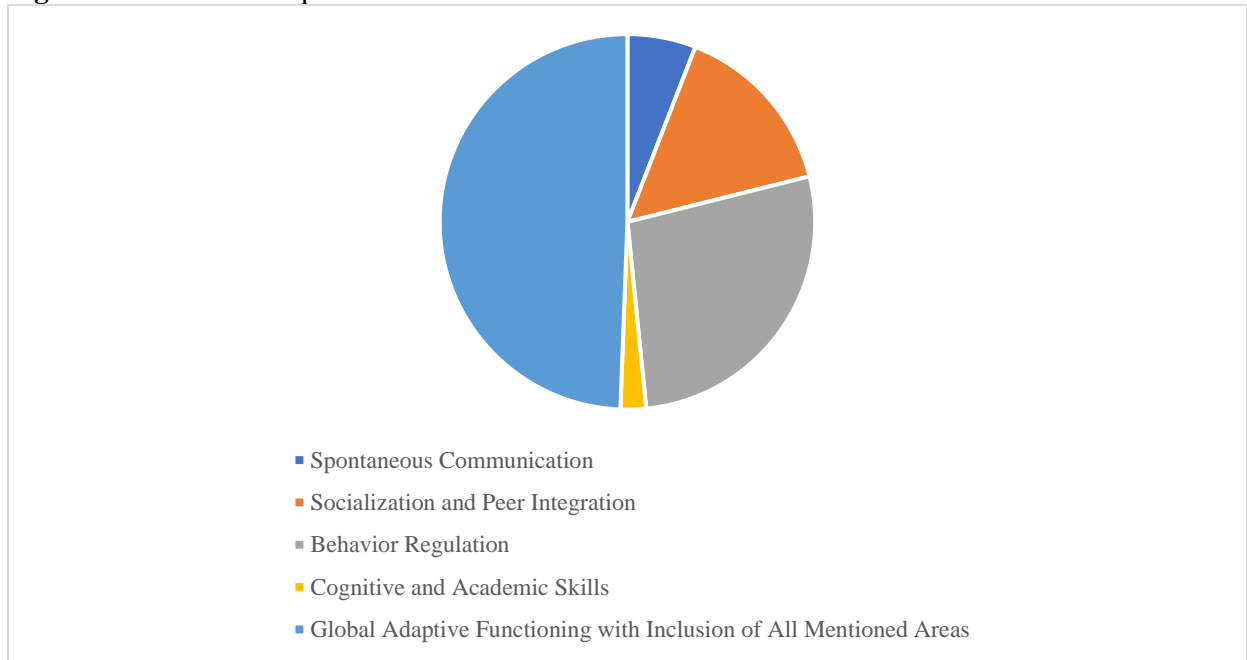
**Figure 2.** Section 2 of questionnaire: answers to item 2



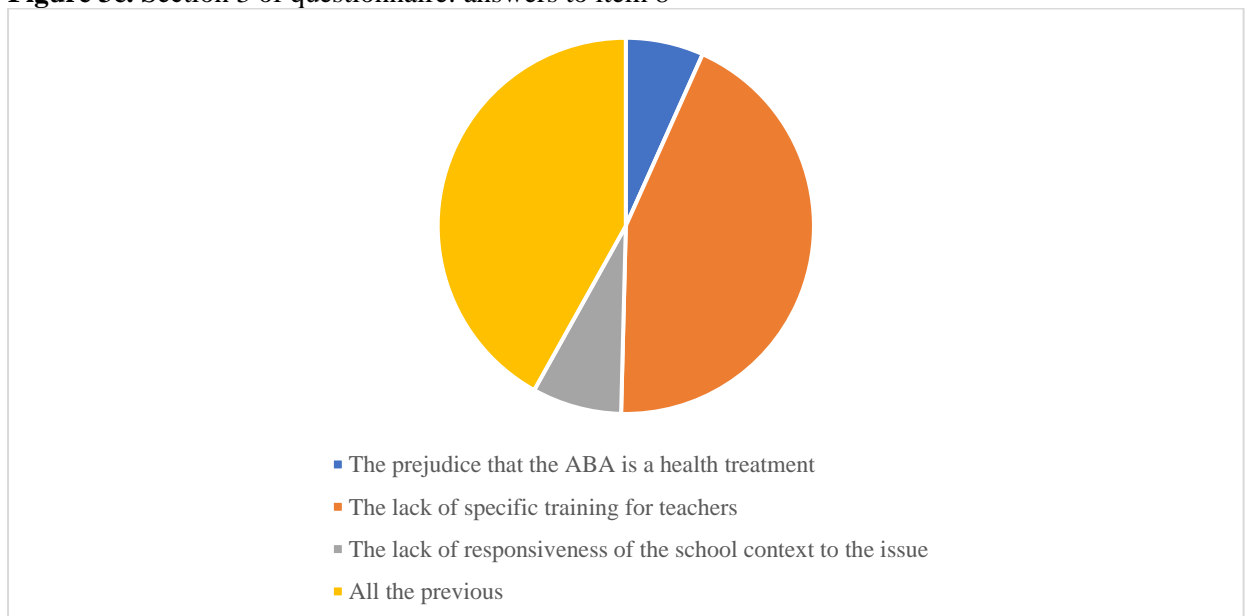
**Figure 3a.** Section 3 of questionnaire: answers to item 1 and 2



**Figure 3b.** Section 3 of questionnaire: answers to item 7



**Figure 3c.** Section 3 of questionnaire: answers to item 8



#### 4. Discussion

The main method used to support individuals with ASD with integration into school and society remains behavioral interventions. Early research on ASD interventions has focused on comprehensive behavioral management based on the principles of behavioral modification, such as applied behavioral analysis (ABA). Such interventions are well established to be effective when used individually and

intensively for a prolonged period. However, resource limitations may prevent their wide and sustained use or, alternatively, lead to long wait times before intervention at publicly funded institutions [16].

Treatment directions may include management of self-control issues or challenging behaviors and addressing the core social deficits in ASD [17]. Reducing undesirable behaviors and developing social skills of at-risk school-aged children with ASD may mitigate bullying cases and increase the likelihood of social inclusion into the community. The involvement of parents, caregivers or teachers in interventions can give consistent expectations to students in home and school environments, which may increase intervention effectiveness. These improvements would likely increase mental health and well-being for individuals with ASD and their caregivers.

The current study was a descriptive assessment of the ABA acknowledgement of Italian teachers. This is an important issue to examine because national data indicate that school-age ASD children perform significantly lower on measures of academic performance than other SEN categories [18].

Based on this descriptive analysis, we found that the most problematic area for ASD in the educational context was socialization and integration with peers. This specific problematic area could hinder the learning process. As we said before, ABA intervention should be started at the earliest possible age and it must be intensive; parent training and support are crucial; intervention should focus on social and communication domains and it should be systematic, built upon specific goals [5,6]. Moreover, the main difficulty that teachers faced was the lack of previous specific training: this data indicates that teachers are not trained enough about Behavioural Disorders. Nowadays, is very common to find children with behavioural disorders (classified as SEN), so it is essential that teachers could be trained about these specific disorders and related behavioural procedures. In addition, ABA therapy could be an effective option for children with different SEN [15]. Based on this, it has been investigated how much teachers know about ABA: it emerged that the main part of them does not know it enough and did not have the opportunity to approach it.

Despite the lack of the teachers' acknowledgment about ABA, it is shared the effectiveness of this kind of intervention. More specifically, it emerged that the major improvement through the use of ABA methodologies was in the Global Adaptive Functioning with Inclusion of spontaneous communication, socialization and peer integration, behavior regulation, cognitive and academic skills.

In conclusion, in order to improve and enhance the diffusion of Behavioural Pedagogy and therefore the systematic application of the ABA Methodology in the School Context, it could be implemented specific training for teachers as themselves reported. Finally, through this descriptive survey, it is underlined that behavioral inertia is fundamental also in the educational field and not only in the health one.

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