SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI"

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DOCTORAL DISSERTATION ABSTRACT

"EDUCATIONAL INTERVENTIONS PROMOTING THE INCLUSION OF AUTISTIC STUDENTS"

For awarding a doctoral degree in professional field

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PhD candidate: **Supervisor:**

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The doctoral dissertation consists of the introduction, four chapters (literature overview of the educational interventions promoting the inclusion of autistic students, research design, results analysis, interpretation of findings and conclusions), list of publications and bibliography. The subject spans 230 pages. There are 12 tables in the text as well as 13 figures. The bibliography contains 279 sources cited in the text and the abstract consists of 44 pages.

Contents

Introduction

Today autism is a complex and multifaceted developmental disorder whose characteristics range on a continuum from mild to severe. Students with autism exhibit severe handicaps in key areas of functioning, such as communication, social interaction, learning, and behavior. The onset of symptoms is found early in childhood and in the majority of cases, the disorder persists throughout life.

The complexity of this disorder contributes to some extent to the existence of conflicting opinions on finding the appropriate educational policy for students with autism. It is now known that while in the past students with special educational needs were separated from their peers in special educational contexts (Karagiannis, Stainback, &stainback,1996), since several years there has been a strong tendency for students with autism and other difficulties to be included in the general classes with their typically developing classmates.

However, the inclusion of students with autism in mainstream school requires careful planning. The level and intensity of support required for a student with autism depends largely on the student's level of functioning. It is considered more widely accepted that for students with autism, upon their inclusion in general classes, the necessary teaching methods must be adopted, so that their various educational and social needs are covered (Gena, 2006)

In fact, research findings show that children with autism who receive systematic and timely intervention based on applied behavior analysis are able to overcome any serious difficulties in the social domain and subsequently create appropriate social interactions with their classmates from the moment they receive systematic intervention from their teachers.

In any case, effective school inclusion presupposes the search for ways that help the child with autism to become an active member of the class.

PART I

FIRST CHAPTER: THEORETICAL REVIEW

1. Autism and autistic students

1.1. Autism and autistic students - general characteristics in school age

Autism is a disorder that is affecting more and more children. These disorders occur in three main areas: communication, social interaction, and behavior. Some people with autism have normal levels of intelligence, while most have some degree of mental disability, ranging from mild to severe (Sakka, 2012).

Childhood autism is not a disease but a serious, complex and lifelong neuro-developmental disorder. It is the predominant and most common condition among a related group-developmental disorders (CDC, 2015), known as Autism Spectrum Disorders (formerly known as "diffuse developmental disorders"). Autism Spectrum Disorders (ASD), which begin in infancy or childhood, are associated with deficiencies or delays in central nervous system maturation-related functions, such as the development of social, communication, and cognitive skills (Volkmar, Siegel, Woodbury-Smith, King, Mc Cracken & State,2014). Symptoms include reduced skills in language, perception, verbal and non-verbal communication, socialization but also a limited, stereotypical, repetitive and often strange repertoire of interests and activities (Syriopoulou-Delli, Kasimos & Tsikoulas, 2015). Disorders can be mild to very severe, affecting only one area of development, such as speech and language, school skills and / or motor function, but can also affect more areas, such as pervasive developmental disorders along with mental retardation.

1.2 The typical image of autism and its characteristics

Diagnosing autism is a process that requires attention as it is not an easy process, even experienced professionals and scientists find it difficult to diagnose, especially when there is a possibility of its coexistence autism in other disorders.

It should not be overlooked that Autism is a disorder that affects the whole spectrum of a child's development; it is a condition that lasts a lifetime, cured does not disappear. The child with autism goes through the educational process, which must be

continuous. Education is the main way to improve it behavior and capacity building to the extent that is possible for children with autism (European Commission, 2005).

1. Autistic isolation: The child is shown to be closed to himself, as if he does not hear or see objects and faces. His gaze seems to be looking at the horizon without his eyes stopping somewhere. He is indifferent both to the adults and to the other children in front of him; he behaves as if they do not exist.

2. Mental development: Such an assessment is difficult because mental abilities almost always coexist with speech disorders. Most autistic children have reduced mental capacity and have difficulty with all thought processes. It is estimated that about 70% of autistic people presents mental retardation.

3. Speech disorders are obvious: Many autistic children - up to the age of five - cannot articulate phrases that are coherent. The child, in particular, expresses himself by making sounds, muttering or repeats words or phrases without meaning and without the possibility of communication.

4. Stereotypes of movements: This term describes the constant repetition of the movements of their hands, mainly the fingers in front of their teeth. The child also makes circles around himself.

5. Need for the fixed-immobile: The autistic child is particularly concerned with material objects and wants to explore them, to touch them, to smell them, to put them in his mouth. Although it shows a great preference for objects that move, there is a strong need to keep material objects immovable (Wing, 2000).

2. Educational interventions for students with autism

2.1 Applied Behavioral Analysis (ABA).

Autism is a complex condition that requires a combination of treatments due to its symptoms and reactions. Applied behavioral analysis and the TEACCH program (Treatment and Education of Autistic and Communication Handicapped Children) are widely used, but the varying manifestations of autism make it difficult to choose an effective treatment. Drug treatments can have both positive and negative effects on individuals, making it difficult to determine whether improvement is due to the

intervention or maturation over time. This ambiguity has led to families of individuals with autism being open to testing unscientific treatments. (Zoniou - Sideris, 2000a).

There is no cure for autism and experts who claim this perspective either lack sound scientific training or exaggerate the results of their interventions. Other behavioral guidance programs include Denver Health, Sciences, the Greenspar method, the LEAP program, and the Miller method. These are interventions that are widely applied abroad, they have great financial burden and presuppose the knowledge of the English language by the children (Kalyva, 2005).

2.2 The TEACCH program

Structured teaching or TEACCH program is an alternative education program for children with disorders of the autistic spectrum, which includes deviations in the environment in which the child lives, daily schedule, object of work and communication. "*The TEACCH approach focuses on the individual and the creation of an educational program skills, interests and needs. The main priorities of the program are the "emphasis on the individual", the understanding of the special nature of autism, the implementation of appropriate adaptations and the extended strategy intervention, which is based on the existing skills and interests of the individual*"(Vogindroukas et. al., 2007).

The basic elements of TEACCH are four:

1. The natural structure of the environment (Bambara & Lohrmann, 2006).

2. The individual daily schedule (Aarons, Gittens, Tessa, 1999).

3. The individual work system. It's a way of organizing an activity at school or at home so that the person with autism can practice it.

4. The visual presentation of the activities. It is a communication system for the child that allows him to make his own needs known to someone else. To achieve this, the following steps are followed:

- Visual organization

- Visual instructions

- Visual clarity

- Visual stimuli are presented, so that everything is clear to the child and to emphasize the important information. (Sundberg & Partington, 1998).

The aim of the intervention by the therapist through TEACH program is to use in the first phase the introduction of the communication interest in the child, then the provision of means for communication (either in verbal or in alternative ways) and finally some reason for communication. Basic the aim of the therapeutic approach is the acquisition by the child of a communication system which will be able to use it only spontaneously and functionally for the contact with the environment and the satisfaction of his individual needs. (Anderson, Taras, Cannon, 1996).

2.3 The PECS

PECS (Picture Exchange Communication System) is a communication program that allows children and adults with autism spectrum disorders and other communication disorders without functional or socially acceptable reason to start communicating. This communication program may not require complex or expensive material and may be implemented in a variety of contexts but requires recognized trainers (Aarons, Gittens, Tessa, 1999).

The PECS protocol evolves in parallel with the formal development of the language in the sense that it first teaches the learner how to communicate or what the basic principles of communication are. Later, children learn to communicate in specific messages (Gena, 2002) Those who use PECS first learn to communicate using only one image, but then learn to combine images to learn different grammars, structures, semantic relationships and communication functions. Then the use of images is taught to other people, besides the trainer / therapist to generalize the acquired knowledge. (Anderson, Taras, Cannon, 1996).

The PECS protocol is based on the research and practical application of the principles of Applied Behavioral Analysis. It emphasizes the development of functional communication skills, the use of appropriate amplifiers and the creation of programs behavioral intervention. It is necessary to use specific training strategies, reinforcement systems, error correction strategies and generalization strategies for teaching each skill (Kypriotakis, 2003).

Many parents and educators are concerned that the use of an image communication system, such as PECS, especially in younger children, may be detrimental to the potential development of their speech.

2.4 Sensory-Motor Interventions

The contribution of sensory-motor interventions is also important. Sensory-motor therapies are based on the belief that the manifestation of ritual and self-injurious behaviors by people with autism is a consequence of their tendency to overreact or underreact to sensory stimuli and their consequent need to reduce the inflow of these stimuli, as they are unable to process them properly. The most common of these types of interventions are music therapy, sensory integration training, auditory integration training, facilitated communication belonging to the so-called visual therapies and the so-called Higashi school or therapy Daily Life (Kalyva, 2005).

- Music therapy

Music therapy is not intended to teach a musical instrument to children with autism, but the use of this intervention is often motivated by the tendency of autistic people to focus more in sounds than in speech. It serves, mainly, purposes of self-awareness and communicative expression. Therapists usually take each child individually and motivate him to produce sound using the musical instrument or to imitate a rhythm. In addition, this method It may also be helpful in reducing the sensitivity of autistic people to sounds (Kypriotakis, 2003).

- Sensory completion

Sensory integration intervention begins with the assessment of the child's case performed using the child's favorite toys in a pleasant environment. This evaluation includes concentration and accurate assessment of the sensory difficulties of the child from the time of his birth. The purpose of the intervention is to find an alternative way of stimulating the senses that are malfunctioning and lead to the recourse to inappropriate behaviors. (Kalyva, 2005).

In addition, supporters of the program claim that the treatment of sensory integration calms a hypersensitive child, while increasing the response of the one who reacts,

leaving, however, unanswered the question of how the same intervention can lead to two completely different reactions (Kalyva, 2005).

- Acoustic integration

Acoustic integration refers to the individual's ability to combine previous knowledge gained from his experiences with a satisfactory processing of new stimuli through the ear in a way that ensures an appropriate and socially acceptable behavior. The association of hypersensitivity to auditory stimuli with behavioral disorders became known as an idea in the early 1990's with the advent of acoustic integration therapy as a form of sensory integration. The main representatives of this controversial intervention are Alfred Tomatis and Guy Berard, who introduced two different methods (Kalyva, 2005).

Regarding the environmental factors affecting the education of autistic students, it is necessary to check them regularly. Lovaas (1981) suggests the following environmental conditions for starting education:

- Removal of objects that distract the child from the educational act.

- Ensuring pleasant conditions and enthusiastic mood on the part of the teacher / therapist.

- Furniture according to the needs of the student.

- Preparation of a detailed list of psycho-educational goals and supervisory material, in order to avoid wasting valuable teaching time and to facilitate frequent data collection.

- Switching between easier and more difficult goals, in order to avoid the child's fatigue and frustration, always starting with goals that do not make the child difficult, but instead encourage his participation in the teaching process.

- Reduction of noises that distract the child's attention.

- Removal of fragile objects, to protect the child from injuries and objects from destruction.

- Use of amplifiers that are not so important to the child that he is disturbed when he has to return them.

- Proximity of teacher / therapist and child that allows the control of the child's behavior and orients the child to the stimuli projected by the teacher / therapist

- Frequent reward not only for the child's learning performance, but also for achieving self-control in behavioral issues.

- The child's ability to remain in his place is a primary goal and a basic condition for his education. When the child will be able to move from his position should not be arbitrary, but should be determined by the teacher / therapist.

- Teaching begins only if the child is calm and cooperative and conducted in a playful manner (Lovaas, 1981).

3. Environmental factors that affect the education of autistic students

The physical environment of the classroom and school needs to be adapted so that the function of each space is understood by the student with autism. For this purpose, the teacher needs to reorganize his classroom, so that there are clear visual and physical boundaries that define each teaching area, so that it is easy to understand what activity is taking place now and at what point in the classroom. In each area the teacher needs to remove all the optics and auditory stimuli that may prevent the student from focusing on activities in this area. The main teaching areas in a classroom are:

  a. Space for one-on-one teaching.
  b. Independent workspace ("I work alone") - a space for every student.
  c. Space for free or fun play and entertainment.
  d. Space for group activities.
  e. Transit area from one activity to another.

Environmental preparation, as well as familiarization of teachers / therapists with some basic theoretical principles and practical recommendations, are, of course, necessary before the start of the educational and therapeutic intervention, but they are not enough to normalize the multiple difficulties that arise at the beginning of the education and treatment of a child with learning and behavioral disorders (Koegel, Koegel, Frea & Fredeen, 2001). To increase the effectiveness of educational interventions for autistic students, it is necessary to use specific strategies. Strategic interventions have a preventive purpose and bring quick results. Research has shown

that they reduce provocative behaviors such as self-harm, aggression, property destruction, and increase desirable behaviors such as engaging in academic activities, productivity, and appropriate social behaviors (Kluth, 2003).

The literature suggests many strategies for intervening in pre-behavioral events that can be used by teachers, such as:

- Changing the classroom environment.

-Providing opportunities for choice (Keefe & Moore, 2004).

Alternative Communication Skills interventions can be applied too. Replacement skills are skills that serve exactly the same function as the behavioral problem. Determining the function of behavior through the formulation of assumptions, also indicates which skills should be taught (Kasari, Rotheram-Fuller, Locke & Gulsrud, 2012). Most Alternative Communication Skills interventions are based on a process known as Functional Communication Training which involves three steps:

a) Conducting a functional assessment to determine the functioning of the behavior (i.e., what the individual is trying to communicate with the inappropriate behavior).

b) Selection of socially appropriate communication behaviors that serve exactly the same function as the behavioral problem.

c) Teaching these communication skills that will replace inappropriate behavior (Kasari et. al., 2012).

4. Strategies to increase the effectiveness of educational interventions for autistic students

Self-management strategies help students with behavioral problems to develop self-regulation and self-assessment skills with the ultimate goal of acquiring and maintaining positive social behavior. (Christensen, Young, K. R. & Marchant, 2007). The most common self-management strategies are:

- Problem solving strategy.
- Stress management techniques.
- Anger control skills.

- Self-monitoring - self-help.
- Play.
- Self-monitoring is an easily feasible and effective intervention. It has been used successfully in many students with average performance up to students with moderate to severe disorders, as a technique to reduce disruptive behaviors and improve academic skills. The Self-monitoring is achieved by teaching students how to identify and record their behavior, and then rewarding them for both successful self-monitoring and reducing provocative behavior (Reid, 1996).

  Self-monitoring includes:

  a) Determination of the behavior to be monitored.

  b) Determination of preferred amplifiers.

  c) Design of a self-monitoring method.

  d) Teaching the student to use the method.

  e) Gradual reduction of the use of the method after maintaining the appropriate behavior.

The behavioral self-monitoring checklist is one activity that effectively reduces negative behavior and promotes learning. For example, the student uses a checklist to record the times he / she asked for help or a break. Then it evaluates itself and strengthens itself (Reid, 1996).

Another one effective intervention that contributes to Positive Behavior Support is Peer Mediated Support. Many researchers have successfully used students as a means to support their classmates in a variety of areas, such as academic knowledge, positive reinforcement and the acquisition of social skills.

Support through peers has been accepted as an effective intervention for students with provocative behavior in inclusive environments. Two types of such support are peer tutoring and peer-to-peer learning strategies Assisted Learning Strategies (PALS) (Murdock, Cost & Tieso, 2007).

The peer-to-peer method of teaching social or academic skills enables students to respond more often to academic activities and to demonstrate the skills they acquire. In addition, the researchers found that teacher-students use more appropriate age vocabulary, as well as examples from the teacher and are usually more direct and

supportive than teachers (Ruef, Higgins, Glaeser & Patnode, 1998). The PALS approach is considered by teachers to be particularly useful for the teaching of social skills.

Another approach that is widely used in children with antisocial behavior is Positive Peer Reporting (PPR). Students are taught to observe their classmate's positive behavior, to report it and to reinforce it. Research shows that the above intervention brings about dramatic changes in the behavior of children in school environments. But there are two limitations: social interaction does not last as soon as the technique ceases to be used, and there is no generalization to less structured environments (Murdock, Cost & Tieso, 2007).

The researchers point out that an effective intervention program for the development of social skills should contain the following components:

 (a) Direct teaching of social skills, providing frequent opportunities to use those skills; and

 b) Immediate reward for the successful use of social skills to replace unwanted behavior with the desired one (Christensen, Young & Marchant, 2007).

Play in early childhood education can take many forms; as well it is a multifaceted approach to learning. Especially, free play allows for children to choose activities and materials based on interests and their imagination. Free play encourages creativity, self-expression and independence as children freely explore the play environment according to their personal interests and values (Avgitidou, 2001) and teachers have the possibility through observation to ascertain the interests of each child especially those with autism.

PART II

Inclusion of autistic students – general characteristics, definitions, and main factors

1.Autism and pedagogic problems in preschool age

Autism spectrum disorder (ASD) is a complex neuro-developmental condition affecting communication, social interactions, and behavior. Despite increased awareness, pedagogic challenges persist in addressing the unique needs of preschool children with autism. Communication is a primary challenge, with limited verbal skills and speech absences. Social skills development is crucial, and educators must employ training techniques and promote inclusive play opportunities. Sensory processing issues are common, and sensory-friendly classrooms with designated quiet spaces and sensory exploration are essential. Challenged behaviors, such as tantrums and repetitive actions, can disrupt learning, and understanding the underlying triggers is crucial for educators. Individualized instruction is vital in meeting the diverse needs of children with autism in preschool settings (Weiss & Harris, 2001).

1.1 The pedagogical impact of autism

Autism in preschool can have both challenges and opportunities for educators to create inclusive and effective learning environments. Children with autism have diverse strengths, weaknesses, and learning styles, requiring individualized instructional strategies to accommodate their unique needs. Educators must use visual aids, augmentative and alternative communication systems, and social skills training programs to facilitate communication and comprehension. Sensory sensitivities and executive functioning skills can also be addressed by creating a sensory-friendly environment and offering sensory exploration opportunities. Providing clear routines, visual schedules, and supports can help children navigate daily activities more successfully (Kopetz & Enowed, 2012).

2. Inclusion vs Integration of autistic students

Inclusive education refers to all students in the school, without being divided into sections and at the same time concerns all school activities. (Stasinos, 2016). According to Sailor, inclusion places children with severe educational difficulties in their neighborhood school, does not accept any form of rejection of these children, and advocates collaborative learning and the development of a collaborative spirit. (Stasinos, 2016).

Integration as a necessity arose when the term "special needs" became widely known and the worldview behind it. This term has been used since the beginning of the twentieth century and the philosophy that surrounds it comes from the field of psychology (Skrtic, 1991). According to Skrtic (1991) the idea of integrating people who have been judged to have special needs was created due to the failure of school systems to educate certain students. To cover up this failure of the system and to show that the education system is democratic, they created new special shaped school units known as special schools (Stasinos, 2013). According to the proclamation of human rights, all children should have equal opportunities in education - but also in general - and at the same time society should be more aware of marginalized individuals (UNESCO, 1994).

Both the concept of "inclusion" and the concept of "integration" refer to the common education of people with and without disabilities. What changes, of course, are the meanings of these two terms (Zoniou - Sideris, 2000a).

As far as the semantic interpretation of the terminology of "inclusion" and "integration" is concerned, the term integration means the attachment and assimilation of one into the whole, that is, the complete absorption of the individual or a team from the set. In the case of education, integration refers to the placement of an individual or a group within another in which it is integrated, thus losing its original characteristics. On the contrary, inclusion is the placement of an individual or a group in another without, however, losing its original characteristics, so the educational program is formed based on both these groups of individuals (Stasinos, 2013).

The difference, then, lies in the fact that in the inclusion the original characteristics of all individuals are preserved, which in fact are enriched and go to constantly rising levels of integration, while in the integration the initial characteristics of a group or an

individual disappear, having been assimilated by the characteristics of a wider whole into which it belongs (Sakka, 2012).

By inclusion, then, we mean the placement of an individual in an environment while maintaining his particular characteristics and uniqueness, while integration means that the individual, entering an environment, loses its original characteristics and acquires those of each ensemble-group into which it penetrates (Zoniou-Sideris, 2004).

3. Main factors for successful inclusion of autistic students

3.1 Autism and inclusion

Examining the issue of inclusion of children with autism, it is considered appropriate to initially define the concept of inclusion. A basic principle of inclusion is that all children should enjoy equal opportunities in education (National Autistic Society, 2003). This means that all children will attend the same school, will be taught by the same teachers, will all follow the same curriculum, but this will vary according to the abilities of the children, taking equal opportunities in teaching and learning (Gupta & Rous, 2016). Inclusion is an approach to education, a philosophy with which man approaches education and society. Booth (2006) approaches inclusion through six types:

1. Inclusion as an interest in students with disabilities or other students who have been categorized as having special needs.

2. Inclusion as a reaction / response / response to disciplinary dismissals (mainly in secondary education).

3. Inclusion in relation to all groups that are vulnerable to exclusion (this includes many groups: minorities, children with an immigrant background, children with a low socio-economic background, etc.).

4. The inclusion of school development for all.

5. Inclusion for education for all.

6. Inclusion as a key approach to education and society.

Booth (2006) emphasizes that inclusion is not something measurable or something that can be achieved at a certain point in time but is an endless process (Slee & Allan, 2001). This simply means that the teacher must constantly look for children who are marginalized for any reason in order to make the corresponding changes to provide equal opportunities in teaching and learning.

Three are the key features of inclusive education (Ainscow & Sandill, 2010).

The first and basic feature of inclusive education is its "nature". More simply, it is a process in the sense that it is not just a change in the curriculum that the Ministry of Education decided to implement overnight. Inclusion is a never-ending process (Ainscow, 2005). It is this daily effort, which the teacher makes, so that he can respond equally to all children, to respond equally to the differences that exist between his students and in his classroom (Angelides, Stylianou, & Gibbs, 2006). In general, there should be an inclusive orientation.

Secondly, it concerns all children. It concerns all children because it has nothing to do with groups of children (e.g., only immigrant students or only children with special educational needs) but is addressed to all children attending the same school. Specifically, there is talk of ways to properly respond to diversity (Hick & Thomas, 2008).

Third, it includes changes and modifications to the content, approaches, procedures and strategies. At this point it is necessary to emphasize this parameter: it includes changes in content and structures (Schwab & Hessels, 2015). It is this characteristic that differentiates it from other concepts.

It is scientifically proven that inclusive education has significant benefits for all students in general (with and without special needs), teachers, but also the wider social environment (Stasinos, 2013). During the implementation and application of inclusive education, students with special educational needs have the opportunity to live and interact in the school environment, avoiding isolation and their exclusion from the educational process (Smith, Polloway, Doudy, & Patton, 1998).

4. The role of mainstream teachers for successful implementation of educational interventions promoting the inclusion of autistic students

Regarding the role of teachers for the successful implementation of educational interventions that promote the inclusion of autistic students, it is of decisive importance. There are two main issues with inclusive pedagogy: the pedagogy that teachers use in the classroom (and if it is inclusive for all students) and the pedagogy used in teacher training if they are preparing to use inclusive pedagogy in the classroom (Stasinos, 2016).

Ainscow (2004) identifies five common characteristics of inclusive schools that should be reflected in pedagogy and systems management to develop teacher skills:

- Emphasis on empowerment activities of the teaching staff in the classroom.
- Operate in ways that encourage collaboration between colleagues.
- At various stages, specific individuals, to adopt key leadership and coordination roles.
- Synchronization is important in the sense that change in practice always seems to take longer than expected.
- Continuous support of people who struggle with new ideas and try to implement them in their classroom.

Various pedagogical methods have proven to be effective for students with special educational needs, such as:

- collaborative group teaching,
- peer teaching,
- the supportive climate in classroom skills,
- social skills,
- knowledge of teaching strategies,
- self-regulated learning,
- memory strategies,
- phonological awareness and processing,
- behavioral approaches,
- functional behavioral assessment,
- direct teaching,

- assessment and practice,

- formative assessment and feedback,

- technology support,

- auxiliary and alternative means of communication (Stasinos, 2016).

In addition to the preparation of teachers, their appropriate training in inclusion issues is also particularly important. Teacher competence is about attitudes, knowledge and skills. The development of practice without exclusions in teaching is an essential qualification of teachers and those responsible for their education (Sakka, 2012).

4.1 The role of the general education teacher during inclusion

The role of general education teachers is crucial for inclusive classrooms, as their attitudes greatly impact learning. To successfully integrate children with autism, teachers need scientific training, professional skills, and faith in their knowledge. They should experiment with alternative teaching methods and adapt syllabuses to meet individual needs (Lester & Evans, 2009). Teachers must also change beliefs and attitudes towards students with autism and their parents to avoid labeling and marginalization. The teacher must create an environment that values individuality and recognizes different learning styles, while being flexible in applying learning strategies and materials. This includes organizing the physical environment, encouraging student autonomy, and fostering positive relationships with teachers and classmates (Quill, 2005).

An important practice for inclusive education is the collaboration of general and special education teachers. In order for all children to be educated in their neighborhood school as advocated by the basic principles of school integration, there must be cooperation between special and general education teachers. Only in this way can the general curriculum be made accessible to all students regardless of their disabilities (Murawski & Locher, 2010). New approaches such as collaborative teaching are needed to realize the global trend of inclusive education.

When there is cooperation between teachers general and special education reduces the feeling of isolation and improves their understanding of the curriculum (Walter-Thomas, Bryant & Land 1996). The students are positively affected when in a classroom they experience the cooperative teaching between two teachers and this is a

role model (Berry, Daughtrey & Wieder, 2009). Students therefore see the learning process and behavioral problems in a different light (Cohen & Hill, 2001).

The five main components of Collaborative Teaching of Children with Autism Spectrum Disorder, which are intertwined, are:

a) Modifications of the environment and the curriculum, general class support and teaching methods: The above modifications are considered necessary for students with autism due to their special needs and include the availability of specially trained professionals (e.g., speech therapists, psychologists, etc.), the cooperation between them and the ability of the general class teacher to receive help from these professionals.

b) Social support and attitude towards integration: The attitude maintained by those involved in the inclusion of children with autism has a significant impact on the successful outcome of inclusion.

c) Coordinated group engagement: Improvements in the way students with autism are integrated into general education can only be observed with the support and close collaboration between general and special education teachers (Sailor, Anderson, Halvorsen, Doering, Filler & Goetz, 1989).

d) Periodic evaluation of integration processes: The evaluation allows checking whether the objectives have been achieved within the framework of the general order. Investigates the student's progress and re-evaluates the appropriateness of the methods chosen to meet the needs of students within the general classroom.

e) Cooperation between the student's home and school: The continuous involvement of parents in educational planning, decision making, and implementation of the program contribute positively to the effective integration process of their child. The participation of the parents must be individualized according to the case and the training of the parents is considered necessary in order to prove to be real partners in the educational and integration process (Solis et. al., 2012).

4.2 Collaboration between general and special education teachers as an inclusive practice

It is widely accepted that when a child with autism is included in the general classroom, the class teacher and classmates should treat him / her as an equal member of the class, ie allow him / her to participate in all activities in the classroom (depending on his abilities), to speak and interact directly with him and not to talk about it to the attendant and generally to accept and recognize him as an important member of the class. In addition, the teacher should ensure that the child with autism does not interfere with the proper conduct of the lesson, such as making noisy noises, moving unnecessarily in the classroom, or refusing to complete an activity and generally not disrupts the functioning of the classroom (Zoniou - Sideris, 2004a).

Training general education teachers in autism can benefit other children by implementing intervention methods for autistic children without confusion. This approach, known as "differentiated" pedagogies, allows teachers to schedule teaching for different types of students simultaneously, improving time management and teaching. However, more resources, training, and support are needed to enhance education and integrate autistic children (Robertson, Chamberlain & Kasari, 2003).

5. Theoretical framework of the research

The institutionalization of the right of persons with disabilities to education in the less restrictive context and the recognition of the important benefits of inclusion in both their social and general development (Handleman, Harris & Martins, 2005), contributed to the increase in the number of children with special needs attending general school.

Most interventions for the inclusion of children with autism in the general school are based, for the most part, on the intervention of the adult or on the mediation of the formal development of their classmates (Weiss & Harris, 2001). The disadvantages of these approaches prompted researchers to develop are intended to shift some of the control of desired behavior to the child with autism. Students who are able to voluntarily take initiatives to interact with their peers become active participants in

social reconciliation and not passive recipients of their peers' initiatives (Weiss & Harris, 2001).

Self-management strategies enhance the individual's autonomy and independence from adult guidance, to increase their chances of spontaneous interaction with their classmates (Harrower & Dunlap, 2001). For this reason, Harrower and Dunlap (2001) include self-management in strategies that promote the inclusion of children with autism. In most surveys conducted in the context of integration, self-management strategies are characterized as successful in achieving their goals. The limited number of studies related to the contribution of self-management strategies to the integration of children with special needs highlights the need for further investigation of their role and contribution to the smooth integration of children in general school (Hughes, Korinek & Gorman, (1991) and McDougall (1998) also emphasize the need to explore the ability of preschool children with severe disorders, such as autism, to apply self-management procedures to develop their social skills and peer-to-peer interaction skills.

The research data so far demonstrate the ability of children with autism, even preschoolers, to apply self-registration procedures in the context of integration, which has a positive impact on their social interactions with their classmates, but also on maintaining behavior, despite the reduction of adult guidance and support provided (Apple, Billingsley & Schwartz, 2005; Thiemann & Goldstein, 2001). Research data show that interventions carried out in naturalistic conditions, such as those formed in the classroom, for example, have a greater impact and lead to better generalization and maintenance of social skills, compared to interventions carried out in special frameworks and conditions, such as, for example, in a separate school room (Bellini et al., 2007).

Finally, from the review of the surveys conducted in the context of integration, it was found that all of them were provided with supportive effects in the form of food or tangible enhancers, while none of them combined self-registration exclusively with the provision of social assistance, which is the most common and more natural form of school support (Alberto & Troutman, 1999). Regarding the provision of supportive consequences, several authors point out the benefits of educating children in seeking adult support, as it promotes the preservation and generalization of the effects of

intervention in the natural environment (Brown & Odom, 1994). In fact, in several studies the search for reinforcement is combined with the process of self-recording (Brooks, Todd, Tofflemoyer & Horner, 2003; Smith & Sugai, 2000). Despite the positive findings of these studies, in just two studies have researchers taught children with autism support skills (Harchik, Harchik, Luce & Sherman, 1990).

SECOND CHAPTER

II. Research Part
1.Aim and objectives of the research -Methodology

1.1 The aim of the research

The purpose of this study was to address the aforementioned concerns and to investigate the effectiveness of a behavioral-analytical intervention in increasing the social interactions of preschool children with autism with their typical developmental classmates.

The objectives of the research were:

1. The systematic verification of the findings of the Gena research (Gena, 2006), which demonstrated the effectiveness of departmental assistance and social support in increasing the generalized initiatives for interaction of children with autism with their classmates. As well as increasing their generalized responses to initiatives taken by their classmates.

2. The experimental investigation of the possibility of preschool children with autism to learn and manifest in a naturalistic context and conditions, skills of self-recording and self-evaluation of the desired behavior, as well as the search for social support.

3. The effectiveness of combining self-enumeration, with partial help and social reinforcement, in increasing the frequency of generalized interactions of children with autism, with their classmates typically developing, in a naturalistic context.

4. The effectiveness of the intervention, applying an experimental design of multiple baselines to different experimental subjects.

5. The possibility of withdrawing adult guidance and limiting the frequency of support provided, and finally, maintaining the frequency of social interactions after the intervention has ended and without the use of self-recording media.

1.2. Hypotheses

H1: Children with autism during preschool age can naturally exhibit the desired behavior with appropriate intervention.

H2: The intervention for children with autism contributes to their social reinforcement and to the increase of the children's interactions with their classmates.

H3: Intervention in children with autism can have long-term effects, namely the maintenance of children's social interactions.

1.3. Research participants

The sample of the present study is selected by random sampling (Paraskevopoulos, 1993b) and consisted of 3 verbal preschool boys diagnosed with autism by an independent authority (Hospital Medical Units), based on the criteria of the 4th edition of the Diagnostic and Statistical Diagnostic Statistics Psychiatric Society (DSM-IV). This sampling procedure serves the need of the present study, for the formation of a clinical sample with very specific characteristics. In general, all the children in the study had almost a normal level of mental function before the study began, although they still lagged far behind in social skills. However, it was not possible to provide weighted scales to measure the mental potential of the participants, due to the absence of psychometric tools aimed at a Greek population of the same age as the participants.

1.4. Research methods

To assess participants' social and adaptive skills, the Vineland Adaptive Behavior Scale (Survey Form, Interview Edition) (Sparrow, Balla & Cicchetti, 1984) was completed prior to the start of the study. All the children who participated in the research were attending pre-school education in the area of Athens, close to their place of residence. The parents and the directors of the pre-school education units in which the children with autism were studying gave their permission to conduct the study. The data collection and the intervention took place within the preschool units,

where the three participants attended, during the free game[1], according to the school timetable, in the presence of the researcher, the attendant, the teacher and the rest of the formal development classmates. The participants in the research participated in the same recreational activities as their classmates and no changes were made to the environment for the needs of the research. The kindergarten teachers did not take any special care of the children, who participated in the research, nor did they organize or interfere in their students' free play in any other way, except to manage behavioral problems, or to prevent behaviors that would endanger the physical integrity of children.

The children attended pre-school education under the supervision of a specially trained escort, who was a university graduate with a degree in pedagogy or psychology.

To conduct the present research, an asynchronous experimental design with multiple baselines between different experimental entities (non-simultaneous multiple baseline between-subjects design) (Barlow & Hersen, 1984) and a variable-condition design (Alberto & Troutman, 1999) was used. The experimental design was asynchronous in the sense that data collection at baseline did not begin simultaneously for all children in the study, but at different times (Barlow & Hersen, 1984).

In the present study, the experimental procedure, in addition to baseline conditions and retesting, included two intervention conditions. The sequence of experimental conditions was as follows: (a) baseline, (b) 1st intervention condition, (c) 2nd intervention condition, and (d) retest.

Base line

During the baseline, the researcher or companion instructed the children involved in the research to monitor and participate in free play activities, without, however, providing any kind of help or support depending on the desired behavior. When, from the visual view of the graph of the child's performance, it was found that his performance was stable, the first phase of the intervention began.

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[1] Free play activities were chosen because they were considered ideal for promoting spontaneous social interactions between children, as opposed to structured activities, where students' attention is more focused on the kindergarten teacher.

1ˢᵗintervention condition: Social assistance and partial assistance

The 1ˢᵗintervention condition was identical to the intervention applied in previous research (Gena, 2006), since one of the purposes of the present research was to verify the findings of this research effort. Specifically, the researcher or companion provided partial help[2] and social support[3] depending on the desired behavior. Particular attention was paid, through the provision of guidance, to the development of five forms of initiatives, which are most often manifested by preschool students of formal development, as they emerged from relevant research (Gena, 2001). These categories of initiatives included questioning, emotional manifestations, commands-prohibitions, announcements, and invitations. When the child's performance stabilized, the 2nd intervention condition began.

2nd intervention condition: Self-management

In the 2nd intervention condition, the children who participated in the research were trained to implement a self-management system in which they self-observed their behavior, recorded, using a counter, the frequency of their interactions and then self-evaluated their level of performance. According to the literature, self-recording is applied, for the most part, to acquired forms of behavior, in order to gradually reduce the provided partial help and reinforcement and to maintain the behavior in the long run (Brown & Odom, 1994; Strain, et al., 1994).

The training of the three participants in the context of pre-school education where they attended, took place in the field of free play, in the presence of the researcher, the attendant, the kindergarten teacher and his classmates of formal development.

In detail, the training procedures in self-management skills, which were followed, were as follows:

-Training in distinguishing between desirable and undesirable behavior.

When each participant was able to correctly identify or name their behavior, more than 80% within the school, self-recording training began.

- Training in the self-recording of independent initiatives for interaction and in the search for social support from the adult. Simultaneously with the education in the self-

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[2] Partial help was defined as any form of verbal or physical guidance provided by the researcher or companion in order to assist the child in the manifestation of the desired behavior.

[3] Social support included verbal praise either affirmative, such as "well done", or descriptive, such as "you spoke very nicely to your friends", non-verbal expressions, such as a smile or applause, physical contact (e.g., hug, friendly pat on the back), as well as other forms of social acceptance.

recording in the context of the kindergarten, the education of the children with autism in the search for social support from the adult took place.

The self-recording training was completed when the 3 participants were able to correctly and without assistance record 80% of their social interactions with their standard development classmates.

Re-check

After the completion of the 2nd intervention phase, the possibility of maintaining the desired behavior in the long run and without the use of self-recording materials (i.e., the meter) was examined. The re-examination took place 3 months after the end of the intervention with M. and L. and 4 months after the end of the intervention with C. The second re-examination of the maintenance of L. interaction skills with his classmates took place 12 months after the end of the intervention. The conditions and the procedure followed, during the re-check, were identical to those of the Base Line. In particular, the researcher monitored the children to participate in free play activities, without, however, providing any kind of help or supportive effect depending on the desired social behavior.

Data collection

The data collection was done simultaneously for the initiatives and the responses, with direct observation and recording of the behavior in a specially designed recording form[4]. The data collection in all phases of the experimental process was done by the author. At the same time, data, in a predetermined number of sessions, were collected by the escorts, in order to check the agreement between observers.

In total, the research lasted about 2 years and specifically started in September 2020 and ended in May 2022.

1.5. Summary of Research Findings

The findings of the present study show that systematic behavioral-analytical intervention in a physical context can effectively help preschool children with autism,

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[4] Each data sheet included the child's name, the name of the observer, the date of the observation, the serial number of the session, the observation box (e.g., free play area in the classroom or yard), and the activities in which the observer participated. Also, the child during the session, the frequency of initiatives, the frequency of responses, the support program and finally, the frequency of the partial assistance provided for the manifestation of the desired behavior.

who are enrolled in a general kindergarten and show mental skills appropriate to their age, to overcome their social disabilities and acquire social interaction skills with their typical developmental classmates. In particular, it was found that the provision of social assistance and partial assistance to three children with autism helped to increase their initiatives for interaction with their standard developmental classmates as well as to increase their responses to similar initiatives of their classmates. The acquisition of self-management skills led to the maintenance and further increase of the frequency of social interactions of the children who participated in the research, which in fact ranged at the same levels as those shown by their typical developmental classmates. The present study also showed that preschool children with autism can learn to self-record their social behavior, as well as seek social support, based on self-assessment of their performance in general kindergarten, skills that contributed to the complete withdrawal of partial assistance, but also aid, to a significant degree. The results were maintained in the long run, after the end of the intervention, without the use of self-recording materials and without providing partial help and support from the researcher to the children who participated in the present study.

Behavior modification to a significant degree does not ensure its social validity, if at the same time it is not maintained in the long run or does not manifest itself in the natural context (Cooper et al., 2007). The results of the present study were clinically significant and socially valid. The intervention brought about a significant change in the social behavior of the participants, which was manifested in the natural context of socialization of the children, and at the same time was maintained in the long run. The intervention also significantly improved participants' lives by helping them acquire skills with functional value, such as self-management and social interaction skills. The social validity of the forms of behavior, which were the goal of the intervention, as well as the effectiveness of the intervention, was ensured through their evaluation by individuals of the immediate social environment of the participants, but also by their comparison with regulatory data. Finally, the complementary statistical analysis of the findings of the present study showed that the effect of the intervention on the behavior of 3 children with autism was statistically significant.

This research is in line with the theoretical framework of Behavior Analysis. The methods used to modify the behavior and to interpret the findings were drawn in the light of this theoretical framework. This research is an Applied Analytical Behavioral Research, as it meets the basic characteristics of Applied Behavior Analysis (Baer,

Wolf & Risley, 1968). In particular, the present study aimed at a key, for the general development of the participants, behavior, such as the skills of independent interaction with classmates (Koegel, et. al., 2001).

The elements in which the originality of this research lies, are:

1.5.1. Using generalization strategies that are proven to promote generalization.

- <u>Development of social skills.</u> The present study expands our knowledge of techniques that promote the interaction skills of children with autism with their typical developmental peers. In particular, it expands the limited number of studies to date, which achieve the development of interaction skills in children enrolled in general kindergartens through the teaching of self-management skills (Harrower & Dunlap, 2001).

- <u>Generalization of skills.</u> The children with autism, who participated in the research, were trained to show generalized reactions. This means that these children were not taught standardized statements, but their education included generalized use of speech and the manifestation and self-recording of various forms of interaction, such as questions, announcements, invitations, commands, and prohibitions, which were harmonized with the conditions of social conciliation. The originality of the present study becomes clear if we consider that previous studies aimed at educating preschool children with autism to self-record a specific category of interaction initiatives, such as compliments (Apple et al., 2005), or the intervention took place in structured conditions, under which social behavior was expected to manifest itself and not in the naturalistic school environment of children with autism.

1.5.2. Maintenance of social skills

- <u>Maintaining skills.</u> In addition, the present study showed that it is possible to maintain interaction skills after the end of the intervention at levels similar to or higher than those of the intervention. This parameter was not systematically investigated by studies relevant to the subject of the present study (Apple et al., 2005), or did not have the expected results (Thiemann & Goldstein, 2001).

- Withdrawal of guidance and reduction of aid. The present study also extends the findings of previous relevant studies (Gena, 2006) regarding the reduction of guidance provided to the child with autism by a kindergarten attendant. In

particular, the intervention of the present investigation resulted in the withdrawal of adult guidance and a significant reduction in the provision of assistance, despite the fact that the intervention was carried out in a natural context.

- <u>Use of regulatory data.</u> Regarding the evaluation of the magnitude of the effect that the intervention had on the behavior, it was done with objective criteria and, in particular, by comparing the performance of the participants with regulatory data, a process that ensures the social validity of the intervention. Previous studies, which have used self-management techniques to develop interaction skills in children with autism in the context of inclusion, either did not provide an assessment of the social validity of the intervention or it was limited to subjective judgments of teachers and parents (Apple et al., 2005).

- <u>Self-management.</u> This research is the first, in Greece, that refers to the implementation of an educational program for children with autism in the skills of self-registration and seeking social support. It achieves the advancement of our knowledge, regarding the self-management processes, through the detailed description of the didactic processes that were followed. It also promotes our knowledge by checking the reliability of important parameters of the intervention, such as the provision of social assistance and partial assistance. These characteristics of the experimental process are absent from the majority of research on self-management (Hughes et al., 1991).

1.5.3. Self-management skills

It is also noteworthy that the learning of self-management and social interaction skills was achieved solely through the use of social enhancers, which participants learned to seek out and the use of food or tangible enhancers was avoided, as in previous studies on the same subject (Apple et al., 2005). The present study also expands our knowledge of the possible applications of the reinforcement search strategy, as it promoted the training of preschool children with autism to seek reinforcement from the researcher, in relation to the development of interaction skills with their peers, in the context of the general school and specifically in the field of free play. No other studies with related characteristics emerged from the literature review (Alber & Heward, 2000). Both the nature of the supportive consequences and the learning of

the search skills by the participants themselves increase the likelihood of generalizing and maintaining behavior in a naturalistic context, such as that of the school (Gena, 2007).

At the same time, the present study successfully used video technology to acquire self-recording skills, which expands the number of techniques available that can be used to teach this behavior. The aforementioned parameters of the intervention and the behavior of the participants, which were investigated in the present study, were not examined by previous studies, which employed self-management procedures in order to develop social skills in children with autism enrolled in general school.

1.6. Research reliability and internal validity

The reliability and internal validity of the research is strengthened since the control of the effect of the intervention was not limited to the behavior of one child but was repeated in two more children. The repeated successful application of the intervention to different individuals increases the reliability of the findings, confirming the existence of a causal relationship between the independent and dependent variable (Mellon, 2007). The internal validity of the research is ensured by the fact that the intervention was not administered simultaneously to all the children who participated in the research, but to a different time for each participant.

The fact that the frequency of each child's social behavior began to increase simultaneously with the start of their education, that is, when and only when the independent variable was introduced in the experimental process, ensures the internal validity of the research. The experimental design used allowed the control of the effect of the independent variable on the dependent one. It reliably demonstrated that behavior modification can be attributed to the intervention, and not to confounding variables. The experimental control, in the present research, is strengthened by factors related to the performance of the participants.

According to Kazdin (1982), the three baselines used in the present research were sufficient to demonstrate the effectiveness of the intervention, as long as:

(a) Children's performance was stable at baseline and especially before the start of the intervention,

(b) The effect of the intervention on behavior was clear and immediate, and

(c) The trend of the intervention data was upward, in contrast with the baseline data trend, which was flat or down. Also, the possibility of the influence of parasitic variables is reduced due to the continuous evaluation of the performance of the research participants, over time. A similar contribution was made by checking the agreement between two observers, when measuring the dependent and independent variables (Kazdin, 1982).

Finally, the existence of statistically significant differences between lines baseline and intervention enhances the internal validity of the findings of this research, as it ensures, to the extent possible, that the effects of the intervention are not coincidental. Indeed, the detection of statistically significant differences, despite the lack of statistical control power, demonstrates the existence of a strong effect of the intervention on behavior.

1.7. Limitations of the research

In relation to the limitations of the research, it is pointed out that research conducted in laboratory settings is designed in a way that maximizes experimental control. Conversely, Applied Behavior Analysis research is conducted in contexts where behavior is expected to occur, making it impossible to fully control the variables that influence it (Cooper et al., 2007). The present research, as applied analytical and behavioral, was conducted in the physical context of the kindergarten and therefore could not have the same degree of experimental control as laboratory investigations (Cooper et al., 2007). A direct consequence of conducting the research in the context of the general school was that the sessions were conducted based on the timetable and program of the kindergarten. This particular fact did not allow data collection to be carried out with the same constant frequency as it is done in laboratory surveys. The absences from kindergarten of the children who participated in the research, as well as the availability of the researcher, had a similar impact on the frequency of data collection. The specific factors resulted in the experimental process being temporarily interrupted, for a period of 5 months, in one of the participants. Also, the video recording of the sessions, in the school context was not possible, which did not allow the checking of agreement between the observers, with the most accurate possible method of "point by point" examination. At the same time, there was no control of the agreement between observers for the accuracy with which the self-management

training was carried out. Although these limitations are common in research conducted in the natural socialization environment of children, they do not call into question the reliability and internal validity of the present research.

1.8. Contributions of the research

The innovation of this research lies in the fact that it can form the basis for the utilization of interventions for children with autism within general education. By evaluating and identifying effective additional interventions, the study can provide evidence-based practices that educators and schools can implement to promote the inclusion of autistic students. Also, the study can contribute to a deeper understanding of the unique needs and challenges faced by autistic students in inclusive settings.

The study can offer practical insights and strategies that teachers can implement in their classrooms to better support and engage autistic students, leading to improved learning outcomes. In addition, the research findings can inform teacher training programs and professional development workshops, equipping educators with the knowledge and skills needed to effectively cater to the needs of autistic students. On the other hand, the study can provide valuable guidance and recommendations to parents of autistic students, enabling them to support their child's educational journey effectively.

The study can contribute to the theoretical frameworks of inclusive education by exploring the unique needs of autistic students and proposing effective ways to foster their inclusion in mainstream classrooms. Furthermore, the research can enhance the theoretical foundation of special pedagogy by focusing on evidence-based interventions for promoting the inclusion of students with autism, addressing their diverse learning styles and needs.

By comparing different interventions and their outcomes, the study can identify the most effective approaches and potentially uncover new, innovative strategies for promoting inclusion.

List of Publications

1.Chatzis, D., & Zamfirov, M., (2019). Strategies for optimizing the teaching process for the benefit of autistic Students. *Young Researchers/Conference Proceedings*, vol. 4, p.104.Sofia University "St. Kliment Ohridski". .

2. Chatzis, D., (2020). Teaching autistic students: Challenges and Perspectives. *Scientific and Practical Conference (*dedicated to the 80th anniversary of the birth of Prof. Dr Georgi Bizkov), p.358. Sofia University "St. Kliment Ohridski".

3. Chatzis, D., (2020). Educational interventions promoting the academic achievements of autistic students. *Scientific and Practical Conference* (dedicated to the 80th anniversary of the birth of Prof. Dr Georgi Bizkov), p.364. Sofia University "St. Kliment Ohridski".

4. Chatzis, D., (2022). Educational interventions promoting the inclusion of autistic students: Personalized (Individualized) Educational Program. *Third Scientific and Practical Conference,* p.893. Sofia University "St. Kliment Ohridski".

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