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ORIGINAL ARTICLE

Views and attitudes of teachers on the educational integration of students with autism spectrum disorders

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Abstract

Objectives: To investigate the views and attitudes of Greek teachers on educational and vocational integration of students with autism spectrum disorders (ASD).

Methods: A statistically reliable sample of questionnaires distributed towards a diversified teacher population is evaluated. The mean values of teachers' responses are analyzed with respect to critical independent variables: previous relevant training; and/or experience.

Results: The majority of the sample had a positive view towards the educational and vocational integration of students with ASD. Nevertheless, teachers appear to be sceptical in assuming that these students can be efficiently treated in their classroom. The vast majority of teachers maintain that students with ASD can be trained in technical vocation. However, the absence of support services is highly ranked as the most serious constraint for vocational integration.

Conclusion: Training and experience substantially influenced teachers' views and attitudes in a positive way towards the integration of students with ASD.

Keywords

Autism, education, integration, students with autism spectrum disorders, teachers, vocation

History

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Introduction

The steady increase seen in autism spectrum disorder (ASD) incidences recently [1] has resulted to more ASD students participating into the educational process [2–4]. In 2005, approximately 120 000 ASD students in the USA received special education [5]. In Greece, the idea of 'one school for all' was introduced recently by specific legislation [6, 7]. As the relevant framework points out, mainstream education and special education is provided to students with disabilities and Special Educational Needs (SEN), paying particular care to these students so they can develop their personality and become capable of autonomous participation in family, vocational integration and social life. This legislation, more specifically, aims at: (a) the multifaceted development of ASD students' personalities; (b) the improvement and development of students' abilities and skills; (c) the integration of students into the educational system, social life, vocational activities; and (d) the mutual acceptance, harmonic existence and equal treatment of students in the society. The goal is to safeguard the full access of ASD students, as well as of their teachers and/or parents-guardians, to all infrastructures (buildings, material, technical assistance, etc.), services and

benefits [8]. The implementation of the principles of 'design for all' is compulsory for the design of educational programs, educational material and equipment (electronic or otherwise), and building infrastructure. In Greece, ASD students comprise around 6.1% of the primary educational population with special needs. Interestingly, this percentage drops down to the negligible 0.3% in the secondary educational level [9].

International educational policies are seen to encourage the integration of SEN students into a mainstream context [3, 10–12]. In the UK, where schools are enforced to make adjustments for SEN students, more than 30 000 ASD students participate in primary and secondary mainstream education [13]. Undoubtedly, the assessment of ASD students' outcome in mainstream education is a critical issue. Nevertheless, empirical research in this field remains surprisingly limited [14, 15]. According to the advocates of ASD students' integration, full inclusion of these students raises teachers' expectations for these students. In conjunction with behavioural mimicking of their 'normal' peers, the result is seen to be more learning by ASD students. It raises ASD students' self-esteem, leads to an understanding and accepting attitude by peer students and, subsequently, to less isolation and stigma for ASD students. A number of studies demonstrate that the autistic behaviour of preschool children is significantly reduced when ASD students mix with 'normal' peers [3, 16–18]. Integration of ASD students is also beneficial for normally developing students who learn to accept variant behaviours and attitudes. It is recognized that ASD students acquire more social skills in integrated settings

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in contrast to segregated structures [4, 18–20]. Rotheram *et al.* support that promoting children with ASD's skills in popular activities to share with peers in early childhood may be a key preventive intervention to protect social relationships in late elementary school grades [3]. Two studies in a preschool setting conclude significant improvements in the psychoneurological development of ASD as well as non-ASD children [21, 22]. Gresham and MacMillan, furthermore, show that pre-school children with disabilities display a higher level of social interaction in integrated classes in contrast to those in separate classes [22]. Also, in a recent study [4] is suggested that significant improvements can be made in peer social connections for ASD students in general education classrooms with a brief intervention, and that these gain persist over time.

Some earlier studies argue that mainstream teachers view themselves as incapable of dealing with ASD students [23]. Other studies, however, support that mainstream schools can substantially help ASD students to widen their social understanding and postulate that teachers display a crucial role in ASD integration programs [24, 25]. Moreover, two critical factors are termed as prerequisites for the successful implementation of these programs; that is, 'the willingness of teachers to participate' and 'the appropriate training of teachers' [26].

In a recent study in the field of educating ASD students, Syriopoulou-Delli *et al.* have investigated the perceptions of teachers on efficiently teaching ASD students, taking Greece as a case study [27]. The present paper intends to enhance the earlier research and expand on the previous empirical findings, contributing further useful insight into ASD students' integration.

The purpose of this paper is to theoretically study, empirically investigate and critically evaluate the key points in the views and attitudes of Greek teachers towards the efficient integration of ASD students into the educational and vocational process. Efficient integration implies participation of ASD students in the full spectrum of education and, wherever possible, integration in the mainstream class, with or without parallel teacher support. The perceptions of teachers are considered to be critical inputs that influence the educational perspectives of ASD students. Furthermore, another critical research motivation relates to the recent legislative framework introduced in the Greek educational system. The systematic approach to integrating ASD students in the educational system as well as their vocational rehabilitation is studied in a holistic framework for the first time and it concerns all educational grades (from pre-school to higher education). Nevertheless, this topic has not been adequately researched as yet. This empirical paper attempts to partially fill the gap in this field.

Methods

Participants

Identity of the Greek teachers' sample

This empirical study is based on the construction, evaluation and statistical analysis of a widely used questionnaire survey, in order to investigate the views and attitudes of Greek

teachers on issues relevant to educational and vocational integration of ASD students. The paper expands upon a recent study on ASD students and Greek teachers [27], based on the same population sample of Greek teachers. The empirical evaluation is organized on the basis of 22 core questions, subdivided into two major parts. The first part of the questionnaire focuses on the educational and professional experience of the teachers' sample population (eight questions). The second part addresses critical questions across the following three pillars (sections): (a) education of ASD students (eight questions); (b) educational integration of ASD students (five questions); and (c) vocational integration of ASD students (one question). Appendix 1 (sections 1 and 2) contains a typical questionnaire sample along the lines put forward.

The study cohort consists of 228 teachers (166 females (72.8%) and 62 males (27.2%)). The prime criterion to construct the sample under study has been that the teachers' population should currently work in the formal educational system of Greece. The core teacher demographic and employment characteristics include age and work experience, measured in years of service. Of the Greek teachers' sample, 83 teachers (36.4%) are in the 31–40 years age range, and 81 teachers (35.5%) in the 41–50 years age range (Table I). As regards years of employment, the sample majority of Greek teachers, namely 73 teachers (32.0%) have up to five (5) years of employment, 49 teachers (21.5%) have 6–10 years, 38 teachers (16.7%) have 11–15 years and 58 teachers (25.4%) have more than 15 years (Table I).

The majority of sample teachers, namely 174 teachers (76.3%) are employed in urban areas and 32 teachers (14.0%) in semi-urban areas. Furthermore, the majority of sample teachers, namely 118 teachers (51.8%) are employed in primary education, and 67 teachers (29.4%) in secondary education. In addition, the majority of sample teachers, namely 144 teachers (63.2%) are employed in mainstream schools, 36 teachers (15.8%) in special schools, and the rest of the sample (evenly divided) are employed in special schools, integration classes, technical secondary education in special vocational training secondary education and multicultural schools (Table I).

As regards Greek teachers' training and experience with ASD students, 83 teachers of the sample population (36.4%) have been previously trained or have attended authorized postgraduate seminars, specialized on autism, at least in one accredited undergraduate or postgraduate course on autism, under the auspice of the Greek Ministry of Education. Those teachers who have participated in unauthorized seminars or have attended only conferences ($n=7$) were not included in the category 'significantly trained'. The term 'authorized' training refers to certified education and training provided by the Ministry of Education that qualifies teachers to work in special education units. The term 'special education units' refers to: (a) schools specifically designated to accommodate SEN students; (b) integration classes to support SEN students to integrate smoothly in the mainstream curriculum; and (c) parallel educational support, functioning aside and concurrently with the mainstream class teacher. The 'unauthorized' training refers to voluntarily and privately gained training, including special seminars, conferences, venues, workshops

Table I. Teachers' demographic and working characteristics.

	<i>n</i>	%
Gender		
Female	166	72.8
Male	62	27.2
Age		
≤30 years	53	23.2
31–40 years	83	36.4
41–50 years	81	35.5
>50 years	8	3.5
No response	3	1.3
Place of work		
Urban areas	174	76.3
Semi-urban areas	32	14.0
Rural areas	7	3.1
No response	15	6.6
Years of employment		
≤5 years	73	32.0
6–10 years	49	21.5
11–15 years	38	16.7
>15 years	58	25.4
No response	10	4.4
Type of educational unit in which teachers are employed		
Special school	36	15.8
Mainstream school	144	63.2
Inclusive class	8	3.5
Technical school	8	3.5
Special education vocational center	5	2.2
Multicultural school	3	1.3
No response	24	10.5
Previous significant teachers' training on autism		
Yes	83	36.4
No	145	63.5
Number of ASD students in the classroom		
None	176	77.2
1–3	27	11.8
4 or 5	13	5.7
More than 5	4	1.8
No response	8	3.5
Previous experience with ASD students		
Yes	64	28.1
No	164	71.9

ASD = Autistic Spectrum Disorder.

and other relevant activities on SEN education. Of the sample population, 64 teachers (28.1%) declare that have experience in teaching and managing ASD students in inclusive classes, mainstream schools or special schools.

The empirical research hypotheses of the study investigate the following issues:

- (i) assess the adequate teacher qualification background and refined abilities so that the teachers are capable of efficiently implementing the new legislation on SEN education;
- (ii) formulate an understanding of the prevailing views and attitudes, among Greek teachers' community in implementing the new educational policy framework in practice.

Measures

The measures employed in this study to evaluate teachers' adequacy and capability in implementing the SEN education

policies include (independent variables in the model): (a) teachers' previous working experience on either mainstream or special education with ASD students; and (b) teachers' background training in handling ASD student needs. Past empirical research emphasizes on these critical issues as decisive prerequisite conditions in the efficient implementation of SEN educational policies [1, 3, 28, 29].

The views and opinions of Greek teachers on the most efficient implementation of the new SEN educational policies are evaluated through an originally structured questionnaire. An initial pilot study was conducted with 20 teachers in the greater Athens area, in order to test for teachers' comprehension and reliability in answering this questionnaire. In this initial pilot study of 20 teachers, we checked for reliability using the Cronbach's alpha coefficient. Based on the option 'view alpha if item deleted' in SPSS, we improved the reliability of the questionnaire by deleting some items. The preliminary teacher responses and feedback as well as the structure of the questionnaire have been based upon and compared with relevant empirical input gained from most recent relevant international studies in the subject [30–33]. The final version of the questionnaire has been concluded and evaluated by the research team.

The questionnaire comprises of three sets of questions referring to: (a) the education of ASD students; (b) the educational integration of ASD students; and (c) the vocational integration of ASD students. Each question included in the questionnaire is considered to be a dependent variable that describes teachers' views and attitudes. The responses 'in line with prevailing educational norms' and 'not in line with prevailing educational norms' are discriminated by the researchers, on the basis of similar past literature practice [30–33]. Responses such as 'I do not know' and 'I do not answer' are defined as responses 'not in line with prevailing educational norms' for the purpose of statistical analysis. As it was mentioned earlier, the dependent variables are investigated and assessed under the influence and impact of the selected independent variables, that is, (a) teachers' education and training on autism; and (b) experience in dealing with ASD students.

Materials and procedures

The questionnaires of the study were distributed to teachers in seven different cities/towns in mainland Greece between November 2008 and May 2009. The sample teachers had earlier voluntary participation in round-table discussions on critical issues relating to ASD; they were employed in different educational units and levels of education (mainstream/special; primary/secondary; vocational/multicultural, etc.); and, they had different educational and training background and experience with ASD students. By random sampling, the questionnaires were distributed to one in three attendees of the round-tables; that is, 300 questionnaires in total were distributed to 900 attendees; and 228 replied questionnaires were finally returned back. The questionnaire responses were anonymous. It was completed via paper and pencil. Written consent was obtained by each responder. Table I summarizes the main properties and characteristics of the Greek teacher cohort.

Statistical analysis and multivariate logistic regression

Statistical analysis of the data was performed using the standard statistical package for the social sciences (SPSS, version 16.0). All variables were categorized and were expressed as frequencies and percentages. The chi-square test was used to evaluate any potential association between teachers' views and attitudes and the selected independent variables (teachers' ASD education and training; teachers' experience on ASD students). In order to assess the independent impact of teachers' training and experience on their perceptions, attitudes and knowledge of autism, a multivariate stepwise logistic regression analysis was also performed; teachers' gender, age, place of work and years of employment were considered as possible confounders. Adjusted odds ratios (aOR) with their 95% confidence intervals (CI) were estimated as the measure of association of teachers' training and experience in autism with their perceptions, views and knowledge of autism. All tests were two-tailed, and the level of statistical significance was set at (probability, p) $p < 0.05$.

Table IIa. Teachers' attitudes on educational integration of ASD students.

	Agree		Disagree		Do not know		No response	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<i>On the education of ASD students</i>								
Education in the case of autism does not contribute significantly to their autonomy/independence	90	39.5	83	36.4	50	21.9	5	2.2
Less than one in five ASD students overcomes the disorder completely	10	4.4	86	37.7	87	38.2	45	19.7
The number of ASD students has increased lately	121	53.1	20	8.8	84	36.8	3	1.3
ASD students cannot understand the feelings of others	94	41.2	92	40.4	35	15.4	7	3.1
Bouts of anger/panic are common symptoms in ASD students	56	24.6	99	43.4	67	29.4	6	2.6
Drug therapy alone is sufficient in the treatment of autism	102	44.7	62	27.2	57	25.0	7	3.1
Autism is classified in the category of heavy disabilities or multidisabilities	68	29.8	72	31.6	81	35.5	7	3.1
<i>On educational integration of ASD students</i>								
I would accept the integration of an ASD student into my classroom	128	56.1	57	25.0	30	13.2	13	5.7
ASD students could integrate into mainstream primary school, but not into secondary school	45	19.7	100	43.9	60	26.3	23	10.1
Attendance at mainstream higher secondary school is not achievable	68	29.8	62	27.2	71	31.1	27	11.8
Most ASD students can have technical vocational training	159	69.7	19	8.3	42	18.4	8	3.5

ASD = Autistic Spectrum Disorder.

Table IIb. Teachers' attitudes on educational and vocational integration of ASD students.

	Yes		No	
	<i>n</i>	%	<i>n</i>	%
I feel capable to treat ASD students in my classroom	37	16.2	191	83.8
I believe that school integration is not facilitated by				
– Impaired intellectual capacity	67	29.4	161	70.6
– Introvertedness (problems in communication)	187	82.0	41	18.0
– Obsessional, stereotypical behaviours and self-stimulation	169	74.1	59	25.9
– Incomprehensible language	136	59.6	92	40.4
On vocational integration of ASD students				
An obstacle for the vocational integration of ASD students is:				
Insufficient vocational training	113	49.6	115	50.4
Restricted social skills (communication, co-operation, etc.)	96	42.1	132	57.9
Social prejudice against ASD students	119	52.2	109	47.8
Unemployment	63	27.6	165	72.4
Lack of support services for students with special needs in vocational training/labour market	160	70.2	68	29.8
Lack of legislative framework for vocational occupation of SEN students?	73	32.0	155	68.0

ASD = Autistic Spectrum Disorder.

Results

Overview of key statistical findings

The empirical findings regarding teachers' views of ASD students are summarized in Tables IIa and IIb. Table IIa refers to teachers' views on educational integration of ASD students and Table IIb refers to obstacles restraining the educational and vocational integration of ASD students.

As explained earlier, three sets of questions were conducted in the survey, in order to investigate the views and attitudes of Greek teachers about the education of ASD students and, in particular, their educational and vocational integration. As regards Greek teachers' views and attitudes about the education of ASD students, only 83 out of 228 teachers (36.4% of the cohort study group) are found to believe that education can have a significant input in the acquisition of autonomy by ASD students, while only 10 teachers (4.4%) consider it impossible even for one in five out of these students to overcome this disorder completely. A major problem of ASD students, recognized by 94 teachers (41.2%), is that they do not understand the feelings of others,

while only 24.6% ($n = 56$) consider bouts of anger/panic as a common symptom. A large percentage (102 teachers; 44.7%) perceive that drug treatment alone is sufficient in the treatment of autism.

As regards the educational integration of ASD students, less than half of the cohort study group ($n = 100$) believe that they can integrate in the secondary school as well as in the mainstream primary school, while the vast majority of the sample teachers (69.7%; $n = 159$) perceive technical, vocational training as more appropriate. Although more than half of the sample teachers (56.1%; $n = 128$) appear willing to accept an ASD student in their class, only 16.21% ($n = 37$) feel capable of dealing with the every day problems of these students (Table IIb).

The educational integration of ASD students is seen to be impaired by a number of critical constraints, including, predominantly, introvertedness and communication problems (82%; $n = 187$); also, obsessive, stereotypical behavior, self stimulation (74.1%; $n = 169$); and incomprehensible language (59.6%; $n = 136$). The economic integration of ASD students is considered to be restricted mainly by the lack of support services for vocational training and the labour market (70.2%; $n = 160$) (Table IIb).

The internal consistency of the questionnaire and its subscales was assessed using the Cronbach's alpha coefficient. The internal consistency of the questionnaire was high; the Cronbach's alpha coefficient was 0.89 for the overall questionnaire, and 0.92 for the 'On education of ASD students', 0.86 for the 'On educational integration

of ASD students' and 0.77 for the 'On economic integration of ASD students'.

Teachers' perceptions of the educational and vocational integration of ASD students in association with their training and experience

The responses of Greek teachers, as discussed in the previous section, are further investigated in association with the teachers' earlier relevant educational and training and/or previous educational experience with ASD students (in inclusive classes, mainstream or special school). The relevant responses are presented in Tables III and IV.

On the education of ASD students

Teachers with previous relevant education and training in autism are seen to have significantly different views and attitudes about the expectations from educating ASD students, in contrast to teachers without previous relevant education on autism. More specifically, 48.2% of teachers with previous ASD training (against 29.7% of teachers with no previous training) believe that education enhances the life of SEN students and contributes significantly to ASD students' autonomy and independence. Half of the teachers with previous ASD education (49.4%) and more than half of the teachers with previous ASD experience (56.3%) support that less than one in five of ASD students overcomes the disorder completely (against 31.0% and 30.5% of teachers with no previous ASD education and experience, respectively).

Table III. Teachers' perceptions on educational and vocational integration of ASD students in relation to their previous training on autism.

	Education on autism				<i>p</i> Value
	No		Yes		
	<i>n</i>	%	<i>n</i>	%	
<i>On the education of ASD students</i>					
Education in the case of autism contributes significantly to their autonomy/independence	43	29.7	40	48.2	0.005
Less than one in five ASD students overcomes the disorder completely	45	31.0	41	49.4	0.006
The number of ASD students has increased lately	72	49.7	49	59.0	0.172
ASD students cannot understand the feelings of others	50	34.5	44	53.0	0.006
Bouts of anger/panic are common symptoms in ASD students	38	26.2	18	21.7	0.446
Drug therapy alone is insufficient in the treatment of autism	40	27.6	22	26.5	0.860
Autism is classified in the category of heavy disabilities or multidisabilities	39	26.9	29	34.9	0.201
<i>On educational integration of ASD students</i>					
I would accept the integration of an ASD student into my classroom	67	46.2	61	73.5	<0.001
I feel capable to treat ASD students in my classroom	20	13.8	17	20.5	0.187
ASD students could integrate into mainstream primary school, as well as into secondary school	58	40.0	42	50.6	0.121
Attendance at mainstream higher secondary school is achievable	38	26.2	24	28.9	0.658
Most ASD students can have technical vocational training	99	68.3	60	72.3	0.526
I believe that school integration is not facilitated by:					
– Impaired intellectual capacity	42	29.0	25	30.1	0.854
– Introvertedness (problems in communication)	113	77.9	74	89.2	0.034
– Obsessional, stereotypical behaviors and self-stimulation	102	70.3	67	80.7	0.085
– Incomprehensible language	87	60.0	49	59.0	0.886
<i>On vocational integration of ASD students</i>					
An obstacle for the vocational integration of ASD students is:					
– Insufficient vocational training	71	49.0	42	50.6	0.812
– Restricted social skills (communication, co-operation, etc.)	61	42.1	35	42.2	0.988
– Social prejudice against ASD students	79	54.5	40	48.2	0.360
– Unemployment	36	24.8	27	32.5	0.211
– Lack of support services for students with special needs in vocational training/labour market	103	71.0	57	68.7	0.708
– Lack of legislative framework for vocational occupation of SEN students?	39	26.9	34	41.0	0.028

Table IV. Teachers' attitudes on educational and vocational integration of ASD students in relation to their experience in the field of autism.

	Experience on autism				<i>p</i> Value
	No		Yes		
	<i>n</i>	%	<i>n</i>	%	
<i>On the education of ASD students</i>					
Education in the case of autism contributes significantly to their autonomy/independence	56	34.1	27	42.2	0.257
Less than one in five ASD students overcomes the disorder completely	50	30.5	36	56.3	<0.001
The number of ASD students has increased lately	83	50.6	38	59.4	0.233
ASD students cannot understand the feelings of others	58	35.4	36	56.3	0.004
Bouts of anger/panic are common symptoms in ASD students	42	25.6	14	21.9	0.556
Drug therapy alone is insufficient in the treatment of autism	50	30.5	12	18.8	0.073
Autism is classified in the category of heavy disabilities or multidisabilities	45	27.4	23	35.9	0.208
<i>On educational integration of ASD students</i>					
I would accept the integration of an ASD student into my classroom	76	46.3	52	81.3	<0.001
I feel capable to treat ASD students in my classroom	19	11.6	18	28.1	0.002
ASD students could integrate into mainstream primary school as well as into secondary school	61	37.2	39	60.9	0.001
Attendance at mainstream higher secondary school is achievable.	41	25.0	21	32.0	0.234
Most ASD students can have technical vocational training	112	68.3	47	73.4	0.447
I believe that school integration is not facilitated by:					
– Impaired intellectual capacity	53	32.3	14	21.9	0.120
– Introvertedness (problems in communication)	130	79.3	57	89.1	0.084
– Obsessional, stereotypical behaviors and self-stimulation	115	70.1	54	84.4	0.027
– Incomprehensible language	100	61.0	36	56.3	0.513
<i>On vocational integration of ASD students</i>					
An obstacle for the vocational integration of ASD students is:					
– Insufficient vocational training of ASD students	81	49.4	32	50.0	0.934
– Restricted social skills (communication, co-operation, etc.)	61	37.2	35	54.7	0.016
– Social prejudice against ASD students	89	54.3	30	46.9	0.315
– Unemployment	44	26.8	19	29.7	0.665
– Lack of support services for students with special needs in vocational training/labour market	115	70.1	45	70.3	0.977
– Lack of legislative framework for vocational occupation of SEN students?	51	31.1	22	34.4	0.634

ASD = Autistic Spectrum Disorder.

Furthermore, more than half of the teachers with previous ASD training and experience (53.0% and 56.3%, respectively) believe that ASD students cannot understand the feelings of others (against 34.5% and 35.4% of teachers with no previous ASD education and experience, respectively). However, only 20.5% and 28.1% of teachers with previous ASD education and experience, respectively, postulate that they could treat/manage ASD students in the class (against 13.8% and 11.6% of teachers with no previous ASD education and experience, respectively). These percentages are indicative of the lack of appropriate preparation, confidence and sufficient resources available to the Greek teachers, in order for them to be capable of dealing efficiently with ASD students' educational integration.

Educational integration of ASD students

Greek teachers with previous relevant studies and previous working experience with ASD students (73.5% and 81.3% of the sample, respectively) are seen to be more willing to include ASD students in their classroom (in contrast to 46.2% and 46.3% of teachers with no previous ASD education and experience, respectively).

The view that an ASD student can potentially integrate into mainstream primary and secondary education is more often supported by teachers with previous ASD training (50.6%) and relevant experience (60.9%). A statistically significant measure was seen only when the teachers' sample was split into sub-samples with or without previous

working experience with ASD students (60.9% and 37.2%, respectively).

Most of the teachers with previous ASD education (72.3%) and past ASD experience (73.4%) believe that most ASD students can have technical vocational training (against 68.3% of teachers with no previous ASD education and experience, respectively). On the other hand, the vast majority of sample teachers consider that the introvertedness of ASD students is the most significant obstacle for their successful integration in the education process (89.2% and 77.9% of teachers with and without previous ASD education, respectively). Other critical obstacles for ASD students' integration include problems in communication (89.1% and 79.3% of teachers with and without previous ASD experience, respectively) as well as obsessional, stereotypical behaviour (84.4% and 70.1% of teachers with and without previous ASD experience, respectively).

Vocational integration of ASD students

Greek teachers share similar views about the vocational integration of ASD students, irrespective of their previous ASD education or experience. The vast majority of the teachers (68.7%) believe that a significant hurdle for the successful vocational integration of ASD students is the absence of support services in vocational training and the labour market. Teachers with previous ASD education (41.0%) consider the presence of a legislative framework as a prerequisite for the vocational integration of ASD students

Table V. Cumulative effect of previous specialized training and working experience on teachers' perceptions regarding the integration of ASD students.

	<i>a</i> *	<i>b</i> **	<i>c</i> ***	<i>p</i>
1. Less than one in five ASD students overcomes the disorder completely	30.2	33.2	64.4	<0.001
2. ASD students cannot understand the feeling of others	31.7	49.1	57.8	<0.001
3. I feel capable to treat ASD students in my classroom	11.9	15.8	28.9	<0.030
4. I would accept the integration of an ASD student in my classroom	42.9	61.4	86.7	<0.001
5. ASD students could integrate into mainstream primary school as well as into secondary school	36.5	47.4	60.0	0.020

ASD = Autistic Spectrum Disorder.

a*: without training or experience; **b*: with either training or experience; **c*: with both.

The table records only the items with statistically significant difference.

Table VI. Association of teachers' previous education and experience in autism with their perception and knowledge about autism, expressed as adjusted odds ratios (aOR) with their 95% confidence intervals (CI).

	Previous specialized education on autism*		Previous working experience on autism**	
	aOR (95% CI)	<i>p</i> Value	aOR (95% CI)	<i>p</i> Value
Education in the case of autism contributes significantly to their autonomy/independence	2.2 (1.2–4.3)	0.016	–	
Less than one in five autistic children overcomes the disorder completely	–		2.5 (1.2–5.0)	0.011
I would accept the integration of an autistic child into my classroom	1.8 (0.9–3.6)	0.084	3.8 (1.8–8.3)	<0.001
I feel capable to treat autistic children in my classroom	–		3.1 (1.3–7.2)	0.009
Children with autism could integrate into mainstream primary school as well as into secondary school (gymnasium)	–		2.7 (1.5–5.4)	0.005
An obstacle for the economic integration of people with autism is:				
– Restricted social skills (problems in communication, co-operation, etc.)	–		2.4 (1.2–4.7)	0.013
– Lack of legislative framework for vocational occupation of people with special needs	2.0 (1.0–3.8)	0.050	–	

ASD = Autistic Spectrum Disorder.

Results of multivariate logistic regression analysis, adjusting for teachers' gender, age, place of work and years of service.

*Reference category: teachers without previous specialized education.

**Reference category: teachers without previous working experience.

The table records only the items with a statistically significant independent association with teachers' previous education or experience on autism.

(against 26.9% of teachers with no previous ASD education). Teachers with previous ASD experience (54.7%) consider the absence of social skills to be another critical constraint (against 37.2% of teachers with no previous ASD experience).

The cumulative effects of teachers' previous ASD education and working experience on teachers' perception of the integration of ASD students are also examined (Table V). The frequencies of responses characterized 'in line with prevailing educational norms' are found to be higher in the group of teachers with past ASD education and experience (19.7%; $n = 45$) than in the group of teachers with no ASD education and experience (55.3%; $n = 126$) as well as than in the group of teachers with either training or experience (25.0%; $n = 57$).

The empirical findings produced by the multivariate logistic regression analysis reveal that specialized ASD education and working experience remain critical and robust independent predictors of teachers' perceptions of the educational and vocational integration of ASD students. The adjusted odds ratios (aOR) are found to range from 1.8 to 2.2 for teachers with previous ASD education and from 2.4 to 3.8 for teachers with previous ASD working experience, at the 95% confidence interval (Table VI).

Discussion

Current Greek educational policies pay particular attention towards the integration of ASD students into the education

process. Until recently, these policies have been implemented through a series of legislative frameworks concerning mainly ASD students. According to official Greek government documents, any modern democratic State that aims at sustainable progress should promote social justice for its citizens and care about the weak ones. A number of past relevant studies underline the crucial role of teachers on the implementation of ASD integration policies and the related prospects of vocational and social integration [26]. On the other hand, the right of SEN persons to participate in the education process has been widely emphasized. This notion is in accordance with the declaration of international organizations such as the United Nations and UNESCO, regarding the protection of human rights and dignity [10].

Despite the important impact of teachers' views and attitudes in the efficient treatment of ASD students into their educational and vocational integration, empirical research in this field remains limited. A core objective of this study has been to partially mitigate this gap, focusing in particular on the Greek educational system and the innovations that take place, under the influence of technological achievements, economic changes and cooperation on education policy with the other European Member States. In particular, this study has investigated the prevailing views and attitudes of Greek teachers for the educational and vocational integration of ASD students.

A critical empirical finding indicates that the majority of Greek teachers are in favour of the educational integration of ASD students, although only recently have ASD students started participating into education in Greece. It appears that teachers are keen to promote the relevant ASD educational policies, supported, nevertheless, by appropriate training and infrastructure. Similarly, earlier studies indicate a positive attitude of trained and experienced teachers towards the integration of ASD students [29, 34–36].

The vast majority of teachers (69.7%) indicates a positive attitude towards the vocational and social integration of ASD students and considers it as the most preferred integration setting. Nevertheless, specific problems are considered as obstacles for the above, by the majority of the sample, as introvertedness, obsessional stereotypical behaviours, self stimulation and incomprehensible language. All these consist and represent the ‘communication problems’ of ASD children. Impaired intellectual capacity is not valued as an overwhelming hurdle by the majority of the sample. This is an interesting finding, as intellectual impairment is not always characterizing ASD children. On the other hand, it is well known that the educational level can be escalated in accordance to each student’s mental capacity. The above is in accordance with the international tendency and educational policy to overcome obstacles of mental deficiency [10]. Based on the empirical findings, the most critical constraint for the successful vocational integration of ASD students is the absence of support services for SEN students during vocational training and at the labour market. This finding relates directly the State ASD educational policies with the ASD student integration.

Past teacher education and experience on autism are seen to be fundamental in supporting teachers in dealing more efficiently with ASD students in mainstream classes. Teachers with ASD education and work experience have a clearer view about the problems of ASD students. A high percentage of teachers with ASD education perceive that education contributes materially to ASD student autonomy. Teachers with previous ASD education and experience have a positive attitude towards ASD student integration into mainstream secondary school. Nevertheless, the teachers’ expectations for that do not reach higher than the secondary school. On the other hand, the majority of educated and experienced teachers on autism perceive that most ASD students can have technical vocational training. In any case, teachers’ ASD education and experience raise the hopes and the expectancies of the education society for ASD students [1, 27, 31, 34–36].

According to training and experience of the teachers’ subsample, introvertedness and problems of communication are seen as the most significant hurdles to tackle for successfully implementing educational integration of ASD students. Hence, specialized training would enable teachers to approach ASD students. Furthermore, obsessional, stereotypical behaviour and self stimulation make the handling of ASD students’ particularities more difficult.

Teachers with relevant training on autism are more willing to accept the integration of ASD students into their classroom in contrast to teachers without previous relevant training. However, only 20.5% of teachers felt capable enough to confront the managerial everyday problems of ASD students,

demonstrating that, although willing, support in practice cannot be met (this percentage is higher at 28.1% for teachers with previous ASD experience). The majority of teachers (irrespective of their training or experience) believe that the lack of support services for ASD students in vocational training and the labour market are the most important constraints for ASD student integration.

Overall, the empirical results are indicative of teachers being positive towards the integration of ASD students. However, teachers do not appear to be confident and fully capable in managing ASD students in the classroom. Specialized education and experience are seen as critical factors influencing teachers’ views and attitudes towards ASD educational issues. Trained teachers have a clearer view and stand positive towards the educational and vocational integration of ASD students. Furthermore, teachers believe that ASD students can participate into secondary education or, alternatively, to technical and vocational education.

These empirical findings are further validated and supported by the multivariate logistic regression analysis. This latter approach underlines the independent impact of specialized education and working experience on teachers’ perceptions of ASD students’ educational integration. A broad conclusion put forward, in conjunction with the authors’ earlier study, is the need for an interdisciplinary educational background focusing on the important leading role of the teachers.

Despite limitations in the empirical research (sample, research methodology), teachers’ views and attitudes regarding the educational and vocational integration of ASD students are related to their training and experience. The institution of legislative frameworks alone cannot promote efficiently the integration of ASD students. As official governmental documents [37] refer to, the latter is not the responsibility of only one person but of the society as a whole (teachers, employees, special scientific staff, etc.), in order to support efficiently the educational and vocational integration of SEN students. Social ideology can only be transformed with persistent training, continuous support (e.g. in-service-training) and broad cooperation with social institutions of people, such as educational staff, who are in key positions for the education and vocational integration of ASD students. This study, however, is limited by certain constraints. For a start, past research has been limited in this field. In addition, the sample size had to be cut down, in order to keep the teachers’ cohort at a manageable level. Moreover, further evaluation of the structured questionnaire and the distribution process should be ideally conducted. However, despite the limitations, the results have been encouraging, and emphasized the significant implications of teachers’ previous specialized training and working experience on autism for the efficient educational integration of ASD students.

In conclusion, growing attention is paid in the educational integration of ASD students and their subsequent vocational integration. Nevertheless, a number of constraints can impair this process. Teachers’ education and ASD training and relevant past experience in working with ASD students appear to be the most efficient ‘tools’ that can inspire teachers’ willingness and empower them with self-esteem, that is fundamental in confronting the everyday problems of ASD

students. The cumulative effects of these two properties are even more 'in line to the prevailing educational norms'. In order to rationalize the dreams and hopes of the educational society about these 'needy' students, and achieve their autonomy, a critical step for their participation in mainstream school, as considered by Falkmer et al. [38] it is important to build upon the knowledge and experience of those teachers who are willing to offer unbearably their service. Nevertheless, well prepared and trained teachers need the appropriate environment, resources and infrastructure to function and apply their knowledge for the benefit of ASD students and the society as a whole.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

References

- Finke EH, McNaughton DB, Drager KDR. All children can and should have the opportunity to learn: General education teachers' perspectives on including children with autism spectrum disorder who require. *Journal of Augmentative and Alternative Communication* 2009;25:110–122.
- Autism Spectrum Disorders [internet]. Centers for Disease Control and Prevention. Autism Information Center (USA). 2007 Dec- [cited 2011 Oct 10]. Available from: <http://www.cdc.gov/ncbddd/autism/index.html>
- Rotheram-Fuller E, Kasari C, Chamberlain B, Locke J. Social involvement of children with autism spectrum disorders in elementary school classrooms. *Journal of Child Psychology and Psychiatry* 2010;51:1227–1234.
- Kasari C, Rotheram-Fuller E, Locke J, Gulrud A. Making the connection: Randomized controlled trial of social skills at school for children with autism spectrum disorders. *Journal of Child Psychology and Psychiatry* 2012;53:431–439.
- Special Education: Children with Autism [internet]. Government Accountability Office (USA). 2007 Dec- [cited 2011 Oct 10]. Available from: <http://www.gao.gov/text/d05220.html>
- Greek Government Gazette. Law 2817/14.3.2000. Education of People with Special Needs, 2000.
- Greek Government Gazette. Law 3699/2.10.2008. Special Education and Education of the Handicapped or Those With Special Educational Needs; 2008.
- Syriopoulou-Delli C. Pervasive developmental disorders. Psychology, pedagogy, sociology. Athens: Grigoris Publications Plc; 2011 (in Greek).
- Anastasiou D, Polychronopoulou S. Identification and overidentification of specific learning disabilities (dyslexia) in Greece. *Learning Disability Quarterly* 2009;32:55–69.
- UNESCO. The Salamanca statement and framework for action on special education. Paris: UNESCO; 1994.
- Chamberlain R, Kasari C, Rotheram-Fuller E. Involvement or isolation? The social networks of children with autism in regular classrooms. *Journal of Autism and Developmental Disorders* 2007; 37:230–242.
- Sipes M, Matson JL, Horovitz M. Autism spectrum disorders and motor skills: The effect on socialization as measured by the baby and infant screen for children with autism traits (biscuit). *Developmental Neurorehabilitation* 2011;14:290–296.
- UK Department for Education and Skills. Special educational needs in England. London: Office of National Statistics; 2008.
- US Department of Education. No Child Left Behind. Public Law: 107–110. Washington, DC; 2002.
- UK Department for Education and Skills. Every child matters. London: The Stationery Office; 2003.
- Schopler E, Short A, Mesibov GB. Relation and behavioral treatment "to normal functioning": Comment on Lovaas. *Journal of Consulting and Clinical Psychology* 1989;57:162–164.
- Mesibov GB, Shea V. Full inclusion and students with autism. *Journal of Autism and Developmental Disorders* 1996;26:337–346.
- Mesibov GB, Shea V. Evidence-based practices and autism. *Autism: The International Journal of Research and Practice* 2011; 5:114–133.
- Hoyson M, Jamieson B, Strain P. Individualized group instruction of normally developing and autistic-like children: The LEAP curriculum model. *Journal of the Division for Early Childhood* 1984;8:157–172.
- Strain PS, Hoyson M, Jamieson B. Normally developing preschoolers as intervention agents for autistic-like children: Effect on class department and social interaction. *Journal of the Early Intervention* 1985;9:105–115.
- Harris S, Handleman J, Kristoff B, Bass L, Gordon R. Changes in language development among autistic and peer children in segregated and integrated preschool settings. *Journal of Autism and Developmental Disorders* 1990;20:23–31.
- Gresham FM, MacMillan DL. Early intervention project: Can its claims be substantiated and its effects replicated? *Journal of Autism and Developmental Disorders* 1998;28:5–13.
- Whinnery K, Fuchs I, Fuchs D. General, special and remedial teachers' acceptance of behavioral and instructional strategies for mainstreaming students with mild handicaps. *Remedial and Special Education* 1991;12:6–17.
- Burack JA, Root R, Zigler EF. Inclusive education for students with autism: Reviewing ideological, empirical and community considerations. In: Cohen DJ, Volkmar FR, editors. *Handbook of autism and pervasive developmental disorders*. 2nd ed. New York: John Wiley & Sons Inc; 1997. pp 796–807.
- McGregor E, Campbell E. The attitudes of teachers in Scotland to the integration of children with autism into mainstream schools. *Autism: The International Journal of Research and Practice* 2001;5: 189–207.
- Huskens B, Reijers H, Didden R. Staff training effective in creating learning opportunities for school-aged children with autism spectrum disorders. *Developmental Neurorehabilitation* 2012;15: 435–447.
- Syriopoulou-Delli CK, Cassimos DC, Tripsianis GI, Polychronopoulou SA. Teachers' perceptions regarding the management of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders* 2011;7:837–981.
- Barnard J, Prior A, Potter D. Autism and inclusion: Is it working? London: National Autistic Society; 2000.
- Robertson K, Chamberlain B, Kasari C. General education teacher's relationships with included students with autism. *Journal of Autism and Developmental Disorders* 2003;33:123–130.
- Grey IM, Honan R, McClean B, Daly M. Evaluating the effectiveness of teacher training in applied behaviour analysis. *Journal of Intellectual Disabilities* 2005;9:209–226.
- Conroy MA, Asmus JM, Boyd BA, Ladwig CN, Sellers JA. Antecedent classroom factors and disruptive behaviors of children with autism spectrum disorders. *Journal of Early Intervention* 2007; 30:19–35.
- Probst P, Leppert T. Brief report: Outcomes of a teacher training program for autism spectrum disorders. *Journal of Autism and Developmental Disorders* 2008;38:1791–1796.
- Roth I, Barson C, Hoekstra R, Pasco G, Watson T. The autism spectrum in the 21st century: Exploring psychology, biology and practice. London/Philadelphia: Jessica Kingsley Publishers; 2010.
- Jordan R. Managing autism and Asperger's syndrome in current educational provision. *Paediatric Rehabilitation* 2005;8:104–112.
- Hess KL, Morrier MJ, Heflin LJ, Ivey ML. Autism treatment survey: Services received by children with autism spectrum disorders in public social classrooms. *Journal of Autism and Developmental Disorders* 2008;38:961–971.
- Cox DJ. From interdisciplinary to integrated care of the child with autism the essential role for a code of ethics. *Journal of Autism and Developmental Disorders* 2012;42:2729–2738.
- Ministry of Education and Religious Affairs. Bulletin of information on special education. Athens: OEDB Plc.; 1994.
- Falkmer M, Granlund M, Nilholm C, Falkmer T. From my perspective – Perceived participation in mainstream schools in students with autism spectrum conditions. *Developmental Neurorehabilitation* 2012;15:191–201.

Appendix 1

Questionnaire about teachers' views and attitudes on ASD and educational – vocational integration of ASD students SECTION 1.

Please circle your selected answers.

- 1) Gender: Male Female
- 2) Married: Yes No
- 3) Age: <30 31–40 41–50 >50
- 4) Do you have any ASD student? Yes No
- 5) Type of school were you are working now:
- 6) Select the most appropriate for the location of the school that you are working at:
Urban Semi-urban Agricultural
- 7) Type of educational unit in which you are employed:
Primary Education Secondary Education
- 8) Type of educational unit in which you are employed (one answer):
Special School Technical School
Mainstream School Special Education Vocational Center
Inclusive Class Multicultural School
- 9) Years of employment: <5 5–10 11–15 >15
- 10) Previous experience with ASD students? Yes No
If the answer of Q10 is “no” please go to Q14
- 11) Years of previous experience with ASD students? <2years 2–5 years >5years
- 12) Type of previous experience with ASD students:
a) In Special School b) In Mainstream School c) In Inclusive Class d) As parent, relative, friend
- 13) Are there any ASD students in the class that you are responsible for?
Yes No
Number of ASD students:
- 14) Undergraduate education in autism?
Yes Specify:
No
- 15) Postgraduate training in autism?
Yes Specify:
No

SECTION 2.

For the following questions mark the most suitable answer.

- A for Agree
D for Disagree
DK for Do not Know

Teachers' perceptions on educational and vocational integration of ASD students

Education in the case of autism does not contribute significantly to their autonomy/independence

Less than one in five ASD students overcomes the disorder completely

The number of ASD students has increased lately

ASD students cannot understand the feelings of others

Bouts of anger/panic are common symptoms in ASD students

Drug therapy alone is sufficient in the treatment of autism

Autism is classified in the category of heavy disabilities or multidisabilities

Students without ASD could integrate into mainstream primary school, but not into secondary school

Attendance at mainstream higher secondary school is not achievable

Most ASD students can have technical vocational training

I would accept the integration of an ASD student into my classroom

I feel capable to treat ASD students in my classroom

I believe that school integration is not facilitated by:

- Impaired intellectual capacity
- Introvertedness (problems in communication)
- Obsessional and stereotypical behaviours, self-stimulation
- Incomprehensible language

An obstacle for the vocational integration of ASD students is:

- Insufficient vocational training
 - Restricted social skills (in communication, co-operation, etc.)
 - Social prejudice against ASD students
 - Unemployment
 - Lack of supportive services for students with special needs in vocational training and labour market
 - Lack of legislative framework for the vocational occupation of SEN students
-