Teachers' perceptions related to attention in autism (QTPAA)

STATE-OF-THE-ART REPORT ON ATTENTION IN AUTISM

This report is based on an online survey conducted within three months period, from April to end of June 2020. In total, 674 teachers and professionals working with children with autism from United Kingdom, Israel, Spain and Greece took part in the survey.

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Table of Contents

1. Introduction

Autism is a neurodevelopmental disorder characterized by difficulties in social interaction and communication, repetitive and stereotyped interests and behaviors, affecting as many as 1 in every 59 children (Centers for Disease Control and Prevention, 2018). One aspect that appears less researched in autism is attention skills, although attention is often atypical in people with autism and is closely linked to academic attainment in this population.

Teacher Training and Attention in Autism (TTAA) project aims to provide resources on the topic of attention in autism for teachers and professionals working with children with autism. This form of knowledge transfer and capacity building is highly strategic in its potential impact on schools having children with autism and improving academic attainment in this population. TTAA aims to promote understanding on the topic of attention in autism for teachers and other professionals working with children with autism as well as provide relevant free resources in the 4 participating countries.

9 partners comprising of 4 universities, 4 schools and a professional development body, from 4 countries (UK, Spain, Greece and Israel) have assembled to carry out the TTAA project. The researchers from the four universities provided complementary expertise in attention, intervention and development of educational technology in autism.

One of the main goals of TTAA project was to generate a report on the practices of attention in autism in the 4 participating countries. This is the final report of the survey for the state-of-the-art on attention in autism.

This survey is about:

1. teachers and professionals who work or have worked with primary aged children with autism (5-11 years) at some point in their career,
2. the training that they have received relevant to autism,
3. their perceptions and the extent to which attention is relevant in the context of autism,
4. their knowledge regarding behaviors that are related to attention in autism,
5. the practices and methods used on assessing and training attention skills in children with autism at schools,
6. their needs regarding additional training on attention in autism, and

7. the resources teachers use to train attention in pupils with autism.

8. Methodology

2.1 Questionnaire development

UOWM (University of Western Macedonia, Greece) in collaboration with UoB (University of Birmingham) led the development of a questionnaire to collect evidence on attention and autism in schools.

The partners discussed the construction of the questionnaire in detail during the first transnational project meeting in Tel-Aviv, Israel in January 2020, in following Zoom meetings as well as email exchanges, and agreed on its final form. At this point, it should be mentioned that the term "teacher" was used as a generic term to cover teachers, educators and other professionals who responded to the survey. The initial questionnaire was developed in English and each partner was responsible for translating the QTPAA questionnaire into their own national languages, resulting into 4 different language versions (English, Hebrew, Spanish, Greek).

2.2 Survey questions

The questions were a mix of multiple-choice, close and open-ended questions in an online format. The wording of the questions included explanatory text for avoiding misconceptions when needed. The questionnaire consisted of 3 sections. The topics of the 3 sections were:

- An Introductory Section: It was designed to provide information for the potential respondents about the aim of the study. Also, in this section respondents were assured of the protection of their anonymity, their roles and opinions in the survey research, following by their consent to participate.
- Section A (SA): Demographic characteristics and other information (12 questions)
    - country of reference-region (Q1)
    - current position (Q2),
    - gender (Q3),
    - highest qualification achieved (Q4),
    - years of experience in education (Q5),

- years of experience in Special Education (Q6)
- age (Q7),
- the respondent is asked if he/she is currently working with a pupil / pupils with autism (Q8),
- the respondent is asked if he/she has worked with a pupil / pupils with autism at some point earlier in his/her career (Q9)
- the respondent is asked to describe the severity of autism in that pupil/those pupils currently working or has worked with (Q10)
- the respondent is asked if he/she has received any training in autism in addition to that covered through any qualification needed for his/her current role (e.g., teacher training or teaching assistant qualification) (Q11)
- the respondent is asked to specify the length of training in autism he/she has received (Q12).

- Section B (SB): Academic performance and behavioral patterns in Autism (14 questions)
  - the respondent is asked to rank indicators in order of their importance with regard to the learning process in autism (Q1),
  - the respondent is asked what attention means for him/her (Q2),
  - the respondent is asked about the extent of which attention is relevant in the context of autism, justifying his/her response (Q3),
  - the respondent is asked to read statements and state whether he/she agrees that the behaviors they describe are related to attention in autism. If they are unsure about a statement, they select “I am not sure” (Q4),
  - the respondent is asked to read statements and state whether he/she agrees that attention is related to them. If they are unsure about a statement, they select “I am not sure” (Q5),
  - the respondent is asked to read attention assessment methods and rate the frequency that he/she applies them with children with autism in his/her educational setting (Q6),
  - the respondent is asked to read attention activities and rate the frequency that he/she applies them with children with autism in his/her educational setting (Q7),

- the respondent is asked whether he/she uses software/apps for training attention as well as to specify them if any (Q8),
- the respondent is asked about his/her confidence with regard to knowledge on attention difficulties in autism (Q9),
- the respondent is asked about his/her views on the benefits of training to improve understanding of attention in autism (Q10),
- the respondent is asked about his/her preference regarding the mode/type of training (Q11),
- the respondent is asked about his/her preference regarding the duration of training (Q12),
- the respondent is asked to rank resources he/she receives information on assessing and training attention in pupils with autism in order of preference (Q13),
- the respondent is asked to name any web resource he/she uses or any resource in general which he/she finds useful (Q14).

The average estimated time to complete the questionnaire was 20 minutes. Once questionnaires were submitted, they were all given codes which means that no one would be able to identify individual submissions. The Introductory section along with the questionnaire (English version) are included in Appendix I.

2.3 Piloting of the questionnaire

The questionnaire was created on Qualtrics software as an online survey, with responses collected in an online spreadsheet. Respondents could provide their answers from any web browser - including mobile smartphone (IOS or Android). Each response could be viewed in a single row of a spreadsheet, with each question shown in a respective column.

All partners were involved in the piloting of the electronic format of the questionnaire from February 2020 to April 2020. 4 teachers for the UK and another 4 for Greece piloted the questionnaire.

After all testing and debugging, the survey was implemented.

2.4 Implementation

The implementation of the survey lasted from April, 15th to June 30th, 2020. The initial dissemination of the survey was based on the contacts of the 9 partners in the 4 countries

(UK, Spain, Israel and Greece). The questionnaire was addressed to teachers, educators, therapists and other professionals in the respective countries that might have been interested in the study.

More specifically, in the UK emails with the questionnaire link were sent to autism societies, University autism centers and schools. It was also emailed to all departmental colleagues, who were asked to share the link with their contacts. Furthermore, the questionnaire link was tweeted and people of influence with many followers were asked to retweet. It was posted on Facebook and tagged with friends and colleagues and a new post with the extended deadline was made as well. Additionally, an item about the project with the questionnaire link was put on the news/events of the School of Education of the UoB and the alumni office was asked to send the questionnaire via email to all UoB graduates, as well to promote the link via UoB social media and notify its students. Nasen, also distributed the questionnaire through their e-newsletter.

Regarding Greece, the questionnaire was distributed through social media, such as Facebook, Tweeter, LinkedIn, either in the form of personal posts or it was posted on influencing pages that are related to Autism. Additionally, professors and people in the boards of Autism centers were contacted and asked to disseminate the questionnaire as well. Also, emails were sent to autism societies and schools.

In Spain, a newsletter was submitted to all the schools registered as having students with autism. Additionally, the questionnaire was distributed through social media, Facebook, Instagram and Twitter.

Each country provided their results, while UOWM compiled the results together. Final data with regard to the open-ended questions was given to UOWM in December of 2020. Before finalizing this report, participating countries gave their feedback.

2.5 Data analysis

The questionnaire was shared among the partners' countries in the respective version. Each country aimed to gather 200 responses. Due to recent adverse conditions regarding COVID-19, Israel and Spain did not reach that goal. Nonetheless, they provided more than half of the 200 responses, which was the original goal. The accepted missing value was set at 20%. In total, 674 teachers and other professionals working with children with autism from the 4 participating countries took part in the survey.

Responses from each partner country varied. 113 were collected from Spain, 148 from Israel, 204 from Greece and 209 from the UK. All Likert scale quantitative data were taken as the mean value of all responses. Teachers and professionals' knowledge of behaviors related to attention in autism was reported additionally as a total score. Most of the responses, depending on their content, were clustered by country. The quantitative data were analyzed using IBM SPSS (Statistical Package for the Social Sciences -V21).

Qualitative data from open-ended questions was coded using Excel and presented without repetitions as a main statement. All conflicting statements were examined for their validity and accuracy by teams assigned from each country. A three-level coding process was used for the inductive thematic analysis of the open-ended questions. The researcher, assigned by each partner country, was guided through all levels of coding. In Level 1, the researcher examined the data word by word, creating codes in the language of the respondents. In Level 2, categories of the coded data from Level 1 that seem to cluster together were formulated. In Level 3, the codes were compared, based on differences and similarities, leading to the formulation of 19 to 22 categories. Each country had its final categories translated into English and provided them to UOWM to conduct the data analysis.

3. Demographic Information - Respondents

SA Q1 Respondents' country

In the question (Q1) "What is the country you work in?" respondents had to indicate both the region and the type of region. From the total number of the 674 submitted questionnaires, 113 answers were valid from Spain, 148 from Israel, 204 from Greece and 209 from the UK, as shown in Figure 1.

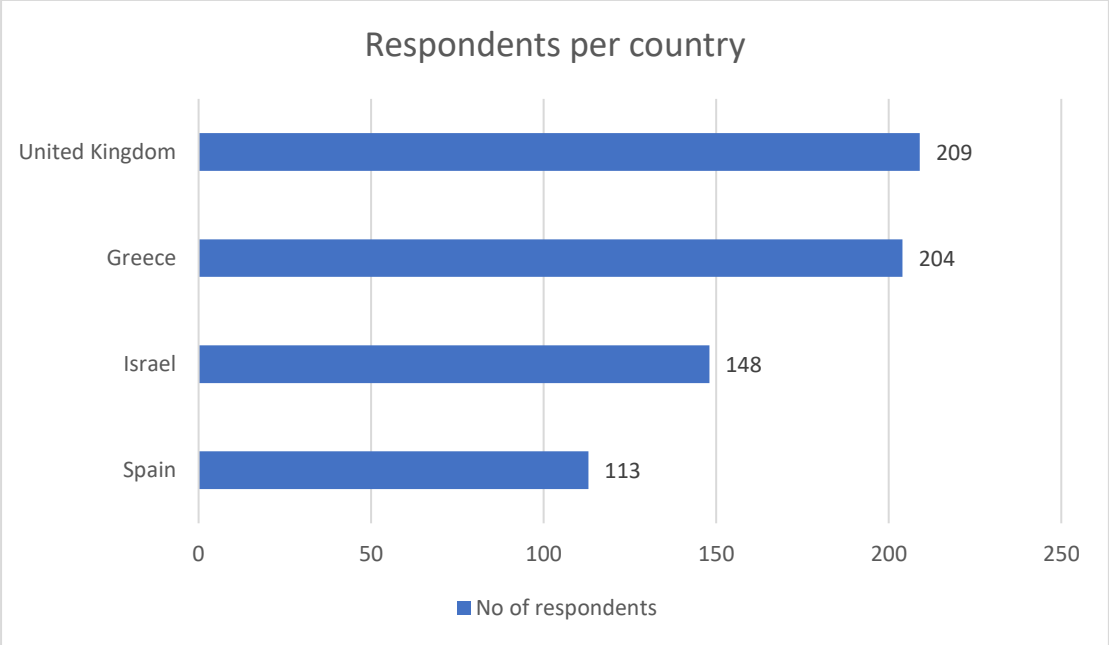


Figure 1. Respondents per country

The distribution of the respondents according to the region within the country they work in is shown in the Figures below. More specifically, in the UK, 92.3% of the respondents were from England (n = 193), 1% from Northern Ireland (n = 2), 5.3% from Scotland (n = 11), 1.4% from Wales (n = 3) (see Figure 2).

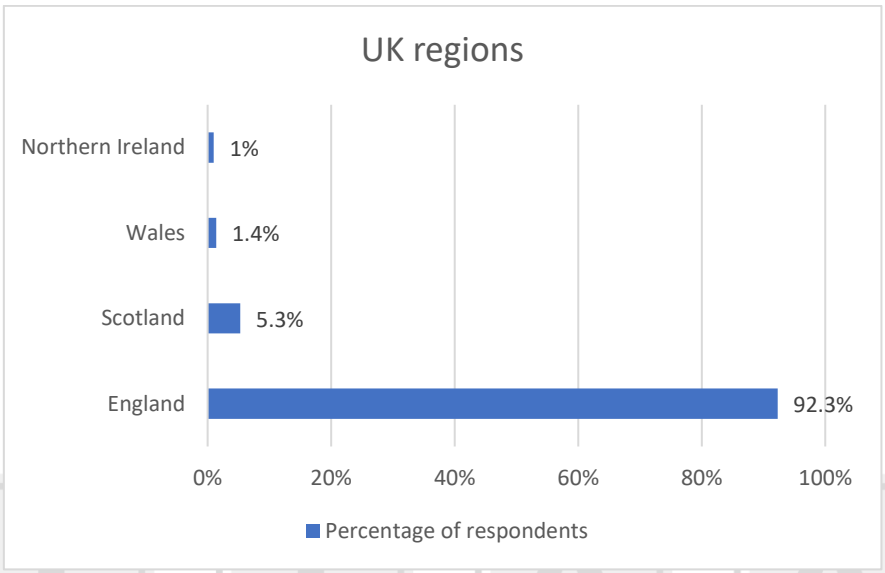


Figure 2. Percentage of respondents per region in the UK

In Greece, 47.3% of the respondents were from Athens (n = 97), 12.2% from Thessaloniki (n = 25), while the remaining were from 27 different regions across the country (see Figure 3).

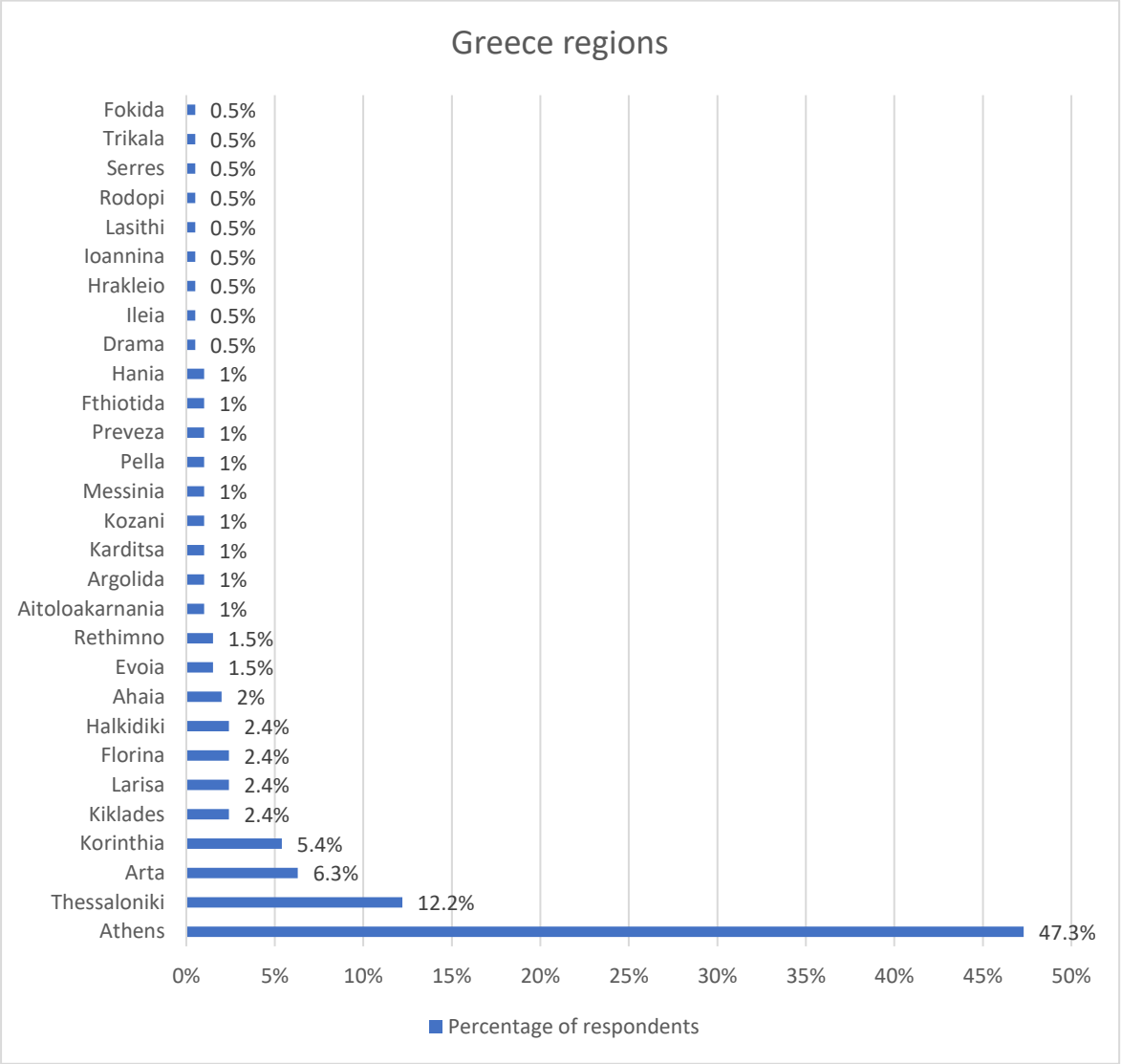


Figure 3. Percentage of respondents per region in Greece

In Israel, 30.4% of the respondents were from the center of the country (n = 45), 29.7% from Tel Aviv (n = 44), 20.9% were from the North (n = 31), 10.8% from Jerusalem (n = 16), 7.4% from Haifa (n = 11) and 0.7% from the South (n = 1) (see Figure 4).

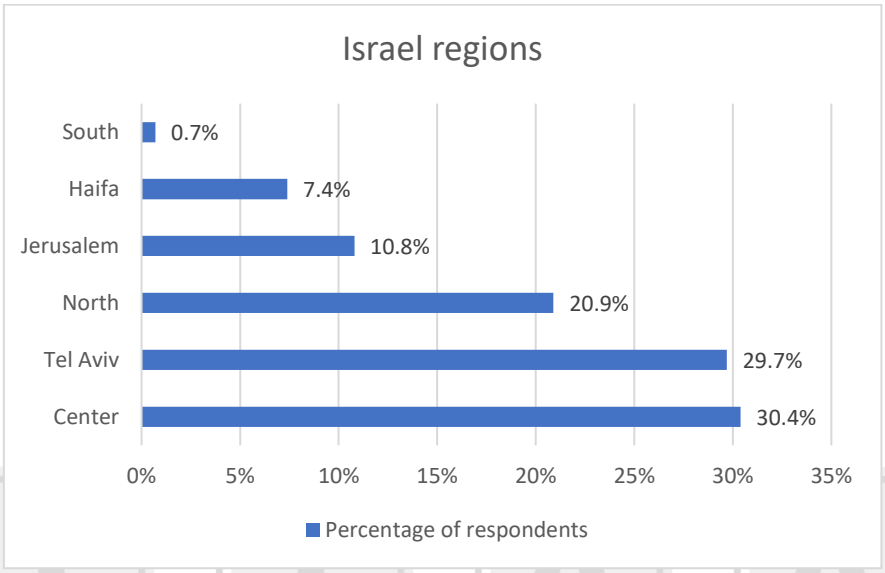


Figure 4. Percentage of respondents per region in Israel

In Spain, 31.9% of the respondents were from Valencia (n = 36), 24.8% from Madrid (n = 28), while the remaining were from 13 different regions across the country (see Figure 5).

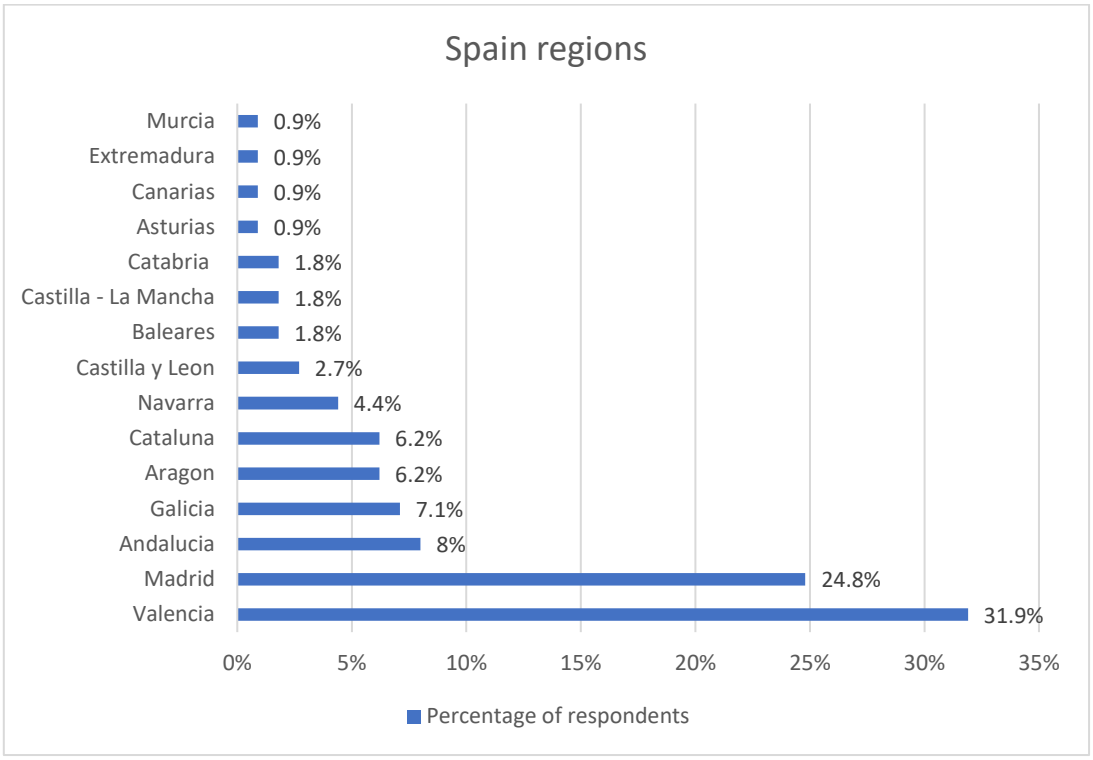


Figure 5. Percentage of respondents per region in Spain

The distribution of respondents according to the population size of the region their school was located within the country is shown in Figure 6. More specifically, in the UK, 65.1% of the respondents were from urban region (n = 136), 26.8% from semi-urban (n = 56) and 8.1% from rural (n = 17). In Greece, 80.5% of the respondents were from urban region (n = 165), 13.7% from semi-urban (n = 28) and 5.4% from rural (n = 11). In Israel, 83.8% of the respondents were from urban region (n = 124), 4.7% from semi-urban (n = 7) and 11.5% from rural (n = 17). In Spain, 84.1% of the respondents were from the urban region (n = 95), 15% from semi-urban (n = 17) and 0.9% from rural (n = 1).

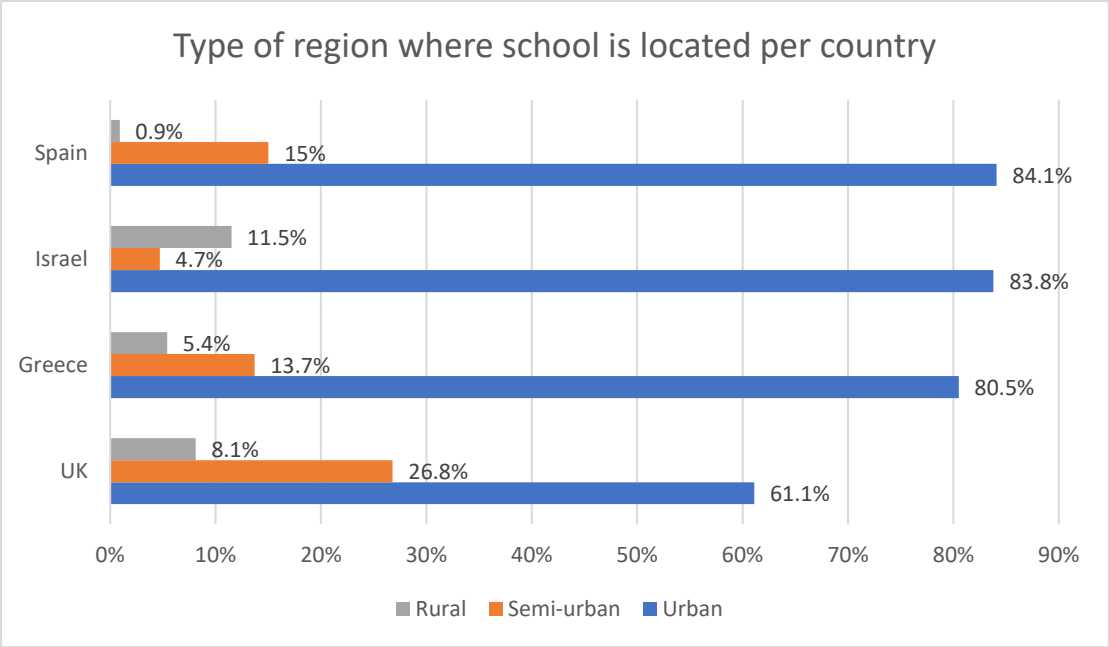


Figure 6. Type of region where school is located per country

Admittedly, the majority of the respondents were from an urban region in all partner countries. Israel, compared to other 3 countries, had the largest percentage of respondents from rural region.

SA Q2 Respondents' current position

In the question (Q2) "What is your current position?" respondents had to indicate their professional placement. Due to differences in terminology and legislation of each partner country, different categories were made. The answers for this question are presented in the figures below.

More specifically, in the UK (see Figure 7), almost one third (28.7%) of the respondents (n = 60) were teachers in special schools, 21.1% (n = 44) were teachers in mainstream schools, 19.6% (n = 41) were Special Educational Needs Coordinators (SENCo), 9.6% (n = 20) were teaching assistants, 7.2% (n = 15) were identified as "other" (see appendix II, Current position, UK "other"), 4.8% (n = 10) were autism advisory teachers, 4.3% (n = 9) were retired teachers, 2.4% (n = 5) were therapists (i.e. psychologist, speech and language therapist, etc.) and the same percentage of respondents (2.4%) were university staff.

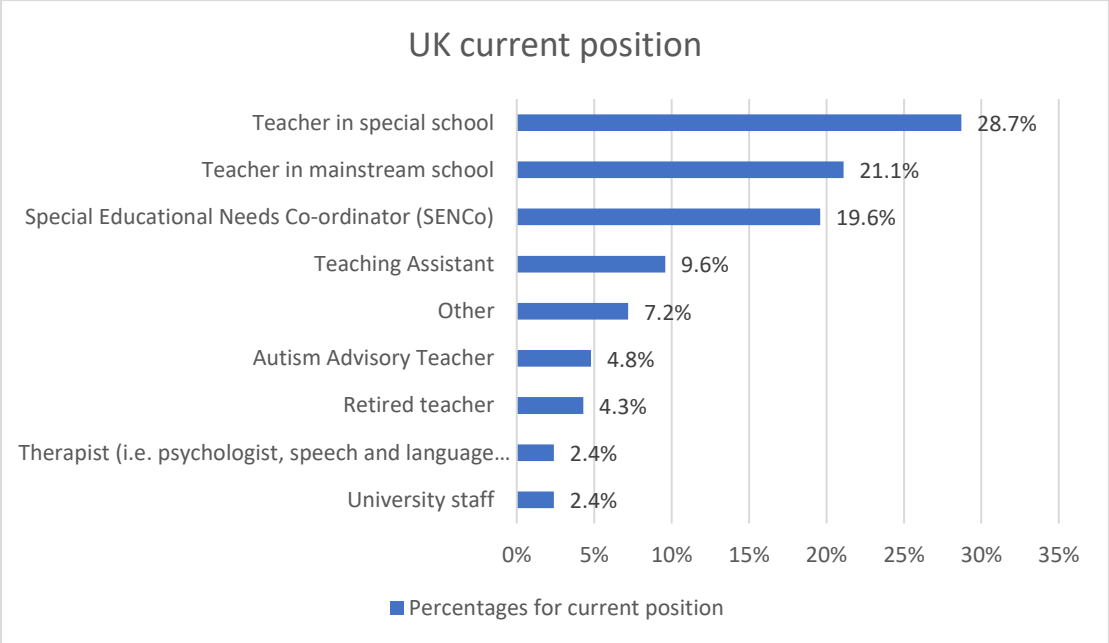


Figure 7. Respondents' current position in the UK

In Greece (see Figure 8), 31.7% of the respondents (n = 65) were general education teachers in a mainstream school, 15.1% (n = 31) were therapists (i.e., psychologist, speech and language therapist, etc.), 13.7% (n = 28) were general education teachers in an inclusive class and the same percentage of respondents (13.7%) were special education teachers in an inclusive class. Moreover, 11.7% (n = 24) were special education teachers in special education schools, 7.3% (n = 15) were co-teachers and 6.8% (n = 14) were identified as "other" (see Appendix II, Current position "other", Greece).

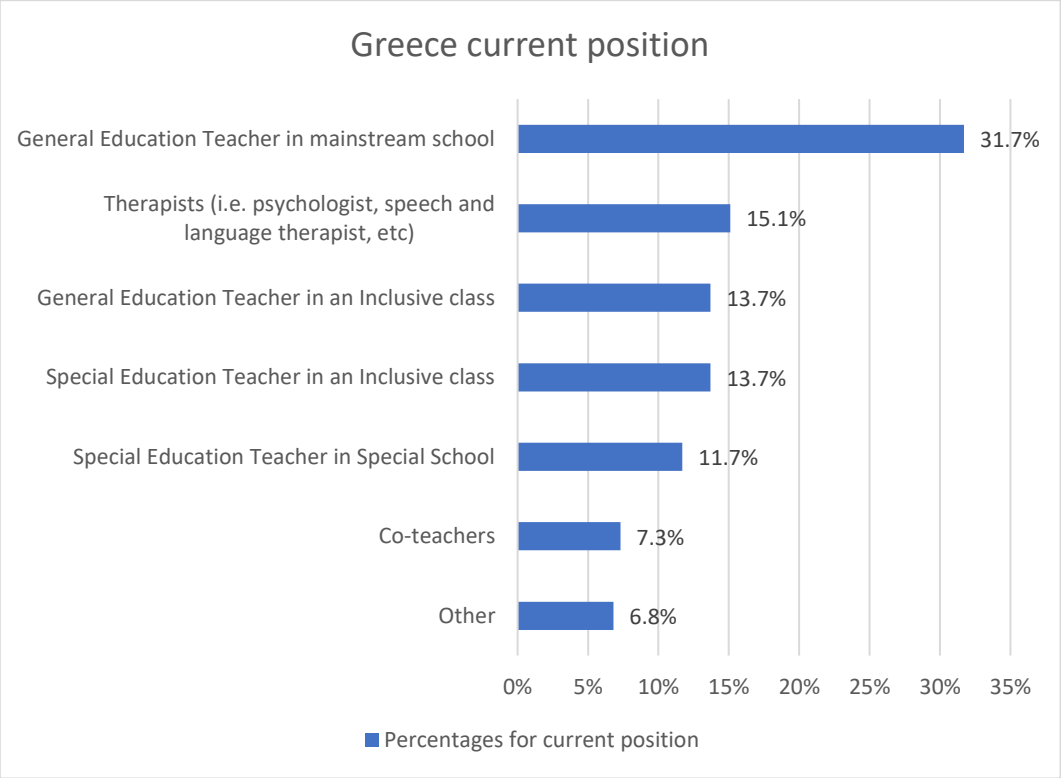


Figure 8. Respondents' current position in Greece

In Israel (see Figure 9), 28.4% of the respondents (n = 42) were teachers (homeroom teachers) of a special education class in a mainstream school, 13.5% (n = 20) were teachers (homeroom teacher) in a special education school, 13.5% (n = 20) were health professionals (psychologists), 10.1% (n = 15) were special education coordinators, 9.5% (n = 14) were teachers (homeroom teacher) in a mainstream class, 4.7% (n = 7) were Math/ Sciences /English teachers of a special education class in a mainstream school, 4.7% (n = 7) were emotional therapists, 4.1% (n = 6) were Math/ Sciences /English teacher in a special education school, 3.4% (n = 5) were identified as "other" (see Appendix II, Current position "other", Israel), 2% (n = 3) were Math/ Sciences/English teachers in a mainstream class, 2% (n = 3) were teacher's assistant in a special education school, 2% (n = 3) were special education instructors (MATIA), 1.4% (n = 2) were teacher's assistant in a mainstream school and 0.7% (n = 1) was substitute teacher in a special education school.

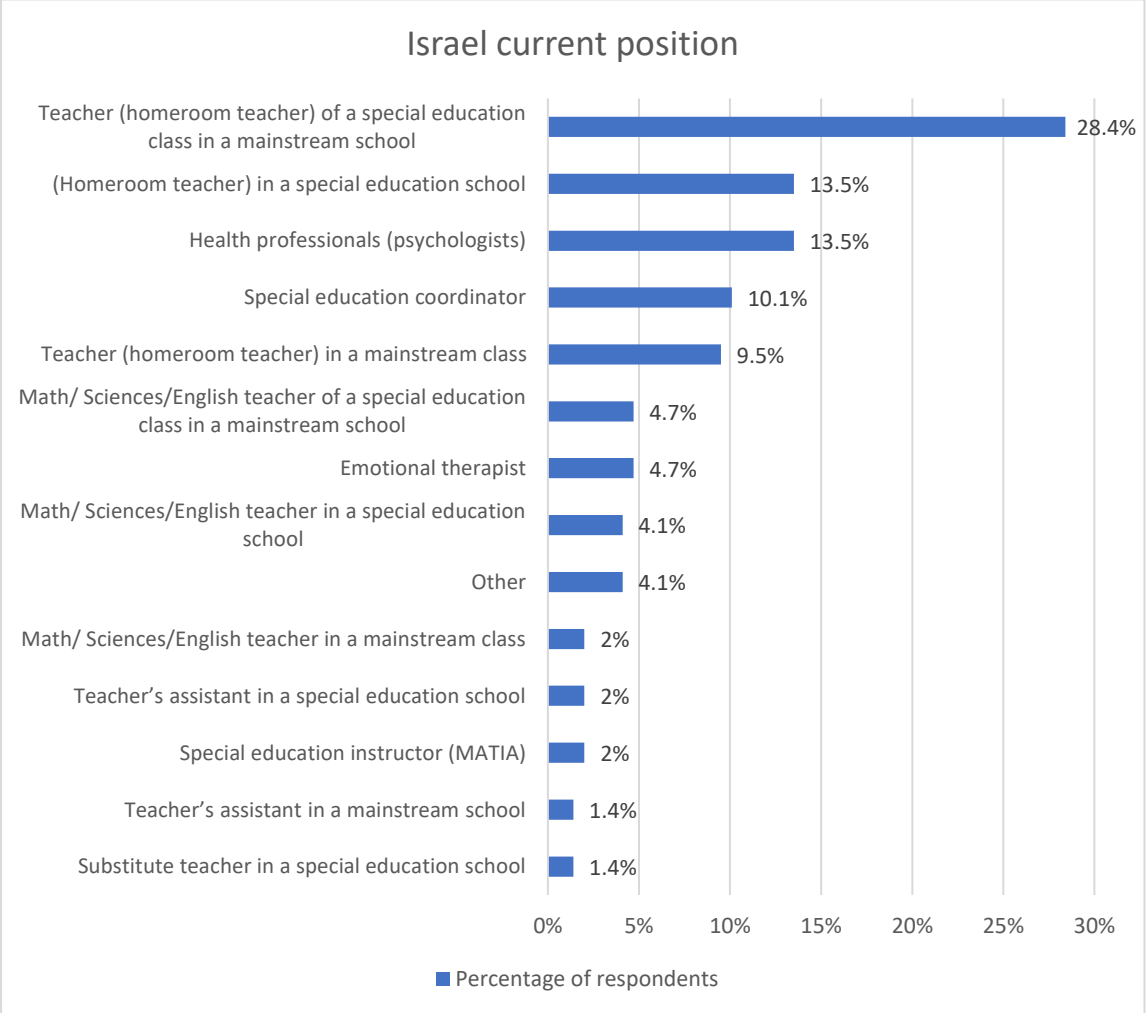


Figure 9. Respondents' current position in Israel

In Spain (see Figure 10), 18.6% of the respondents (n = 21) were teachers in mainstream school, being in charge of children with SEN, 17.7% (n = 20) were special education teachers in special schools, 15.9% (n = 18) were special education teachers in mainstream schools, 13.3% (n = 15) were teachers in mainstream school, but not in charge of children with SEN, 10.6% (n = 12) were counselors, 9.7% (n = 11) were educational and technical assistants, 9.7% (n = 11) were therapists (i.e. psychologist, speech and language therapist, etc.), 2.7% (n = 3) were teachers in an autism unit, and 0.9% (n = 1) was identified as "other" (see appendix II, Current position "other", Spain).

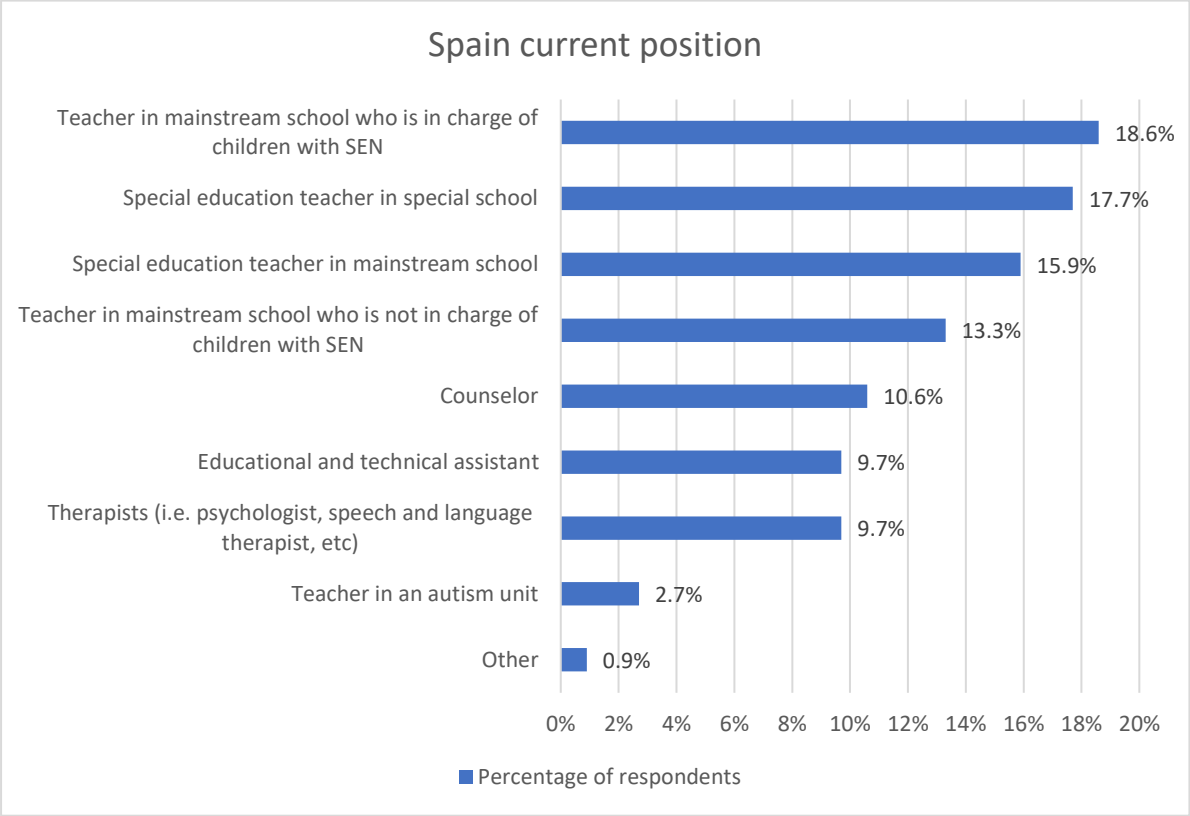


Figure 10. Respondents' current position in Israel

On the whole, teachers hold the largest percentage of respondents among all partner countries, either in a mainstream school or special schools, followed by therapists (i.e., psychologist, speech and language therapist, etc.).

SA Q3 Respondents' gender/sex

In the question (Q3) "What is your gender?" the distribution of respondents for all partner countries is depicted in Figure 13. In the UK, 90% of the respondents were female (n = 188) and 10% were male (n = 21). In Greece, 85.9% of the respondents were female (n = 176) and 14.1% were male (n = 29). In Israel, 94.6% of the respondents were female (n = 140) and 5.4% were male (n = 8). Finally, in Spain, 89.4% of the respondents were female (n = 101) and 10.6% were male (n = 12) (see Figure 11).

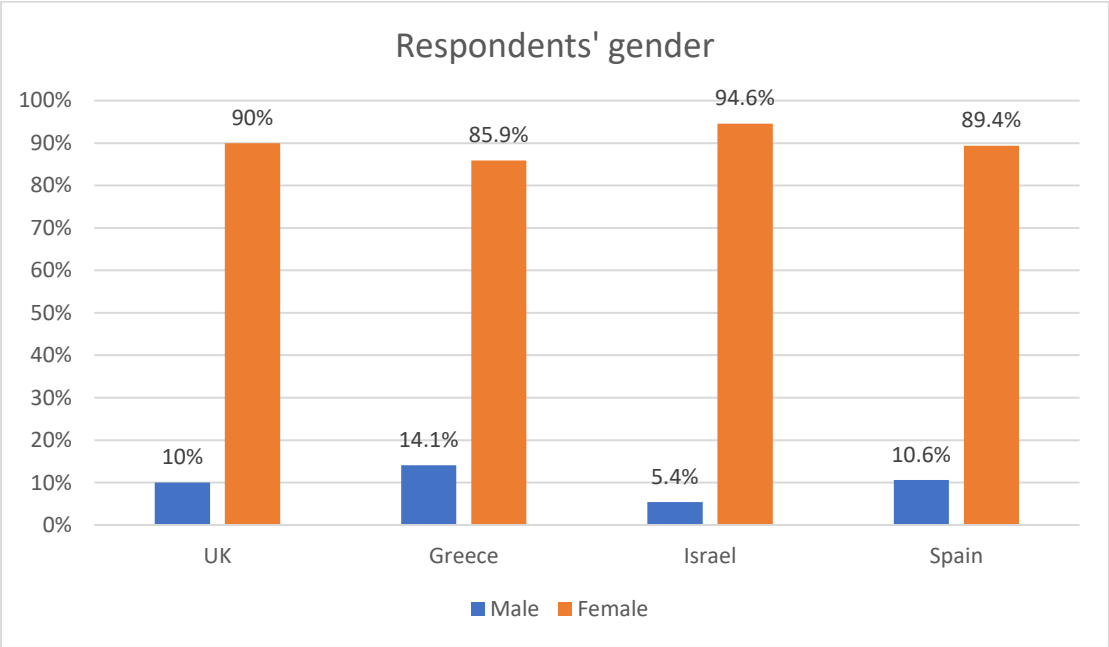


Figure 11. Respondents' gender distribution per partner country

It becomes obvious that our sample is dominated by females in all partner countries, while Greece holds the largest percentage in males and Israel the smallest.

SA Q4 Respondents' qualifications

In the question (Q4) "What is the highest qualification you have achieved?" respondents had to indicate their educational background. The distribution of respondents according to their qualifications is shown in Figure 12.

More specifically, in the UK, 70.8% (n = 148) of the respondents held a postgraduate degree, 19.6% (n = 41) an undergraduate degree, 4.8% (n = 10) had vocational/professional qualifications and 3.8% (n = 8) a doctorate.

In Greece, 53.7% (n = 110) of the respondents held a postgraduate degree, 37.6% (n = 77) an undergraduate degree, 5.4% (n = 11) a doctorate and 3.4% (n = 7) had vocational/professional qualifications.

In Israel, 45.9% (n = 68) of the respondents held an undergraduate degree, 42.6% (n = 63) a postgraduate degree, 7.4% (n = 10) an additional certificate, 1.4% (n = 2) a doctorate, 1.4% (n = 2) a high school diploma and 1.4% (n = 2) a qualification identified as "other" (see Appendix II, Qualification "other", Israel).

In Spain, 69,9% (n = 79) of the respondents held a postgraduate degree, 24,8% (n = 28) an undergraduate degree, 2,7% (n = 3) had vocational/professional qualifications, 1.8% (n = 2) a doctorate and 0.9% (n = 1) had a qualification identified as "other" (see Appendix II, Qualification "other", Spain).

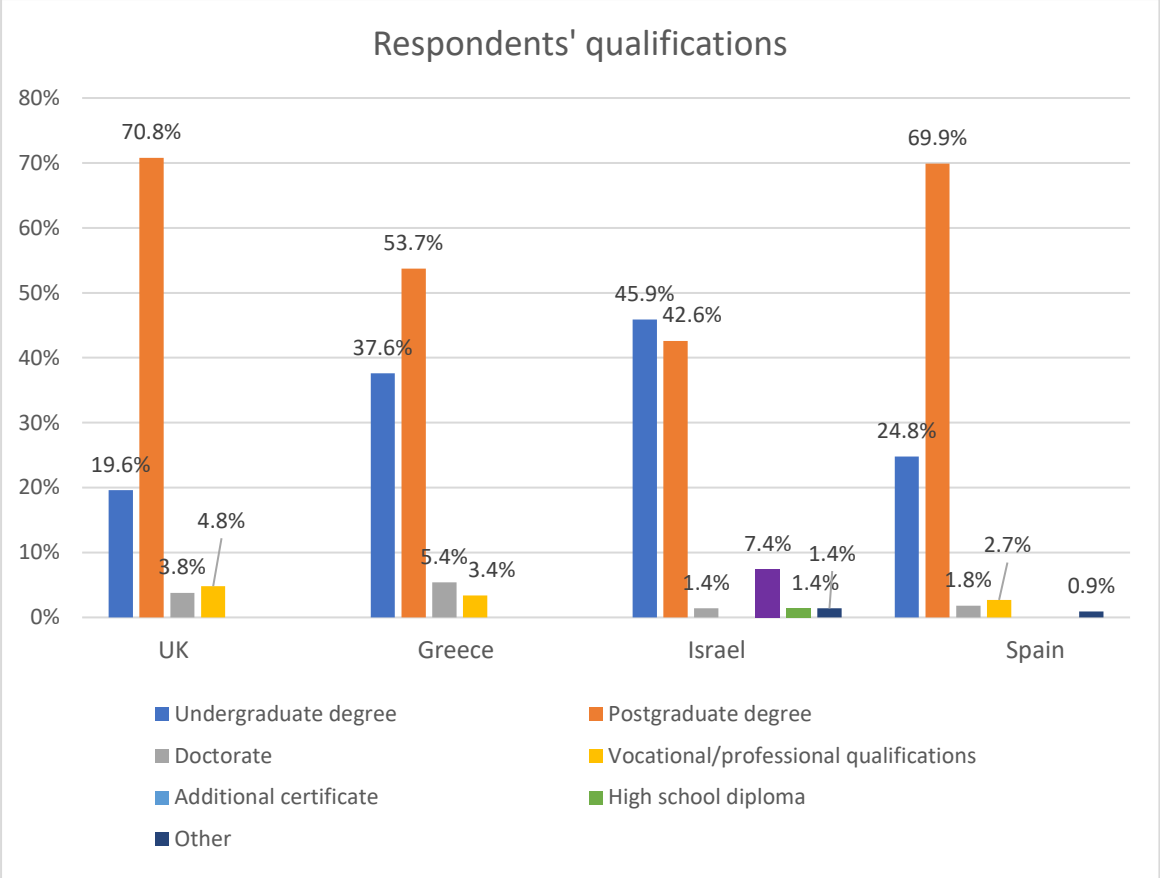


Figure 12. Respondents' qualifications per partner country

Apparently, UK and Spain have the highest percentage of respondents who hold a postgraduate degree (70.8% and 69.9% respectively). In Greece, more than half of the respondents (53.7%) also hold a postgraduate degree, while less than half of the Israeli respondents (42.6%) continued their studies after obtaining a bachelor degree.

SA Q5 Respondents' years of experience in education

In the question (Q5) "How many years of experience in school have you got in total?" respondents had to indicate their experience in education. The distribution of respondents according to their years of experience in education is shown in Figure 13. More specifically, in the UK, 30.6% (n = 64) of the respondents had 0-10 years of experience, 34.9% (n = 73) had 11-20 years and 34.4% (n = 72) had 21 years or more of experience in schools. In Greece, 39% (n = 80) of the respondents had 0-10 years of experience, 37.6% (n = 77) had 11-20 years and 23.4% (n = 48) had 21 years or more of experience in schools. In Israel, 54.7% (n = 81) of the respondents had 0-10 years of experience, 23% (n = 34) had 11-20 years and 22.3% (n = 33) had 21 years or more of

experience in schools. Finally, in Spain, 46% (n = 52) of the respondents had 0-10 years of experience, 36.3% (n = 41) had 11-20 years and 17.7% (n = 20) had 21 years or more of experience in schools.

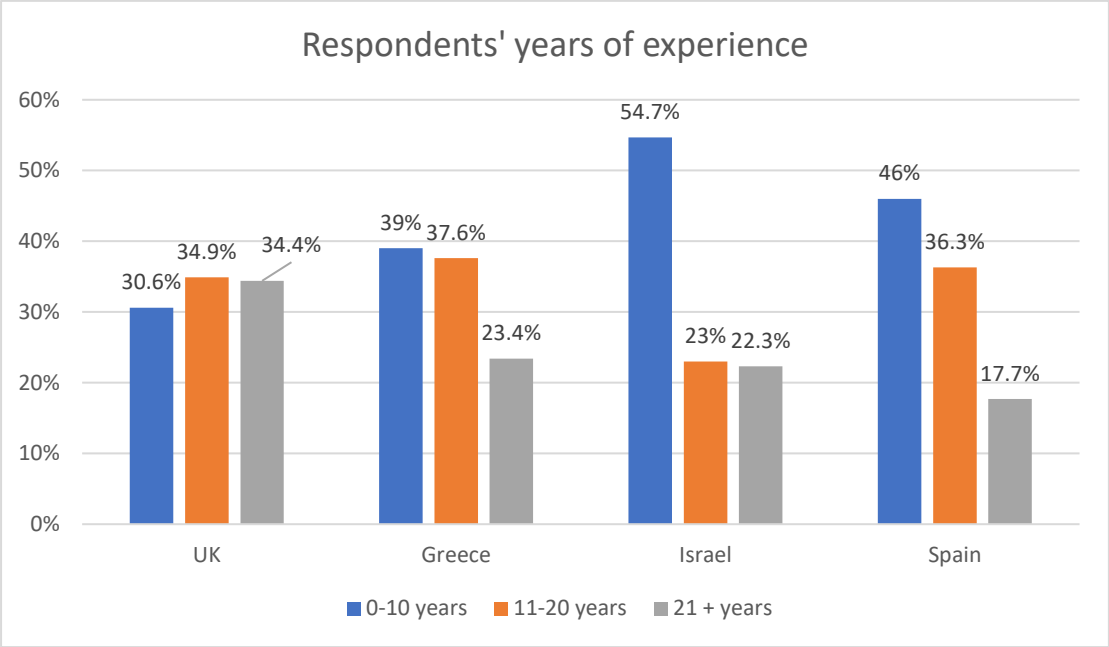


Figure 13. Respondents' years of experience per partner country

Hence, with regard to respondents' years of experience, UK was the country with more experienced (21+ years) respondents (34.4%), while the majority of the Israeli respondents (54.7%) had limited experience (0-10 years).

SA Q6 Respondents' years of experience in special education

In the question (Q6) "How many years of your school experience is in special education?" respondents had to indicate their experience in years in special education, for example specialist provision or working with children with special needs in mainstream provision. In order to present the distribution of respondents according to their years of experience in special education, 4 categories were structured: "no experience", "1-10 years", "11-20 years" and "21 years or more". Results are presented in Figure 16. More specifically, in the UK, 4.8% (n = 10) of the respondents had no experience in special education, 52.6% (n = 110) had 1-10 years of experience, 26.3% (n = 55) had 11-20 years and 16.3% (n = 34) had 21 years or more of experience in special education. In Greece, 18% (n = 37) of the respondents had no experience in

special education, 57.1% (n = 117) had 1-10 years of experience, 20.5% (n = 42) had 11-20 years and 4.4% (n = 9) had 21 years or more of experience in special education. In Israel, 4.1% (n = 6) of the respondents had no experience in special education, 64.2% (n = 95) had 1-10 years of experience, 25% (n = 37) had 11-20 years and 6.8% (n = 10) had 21 years or more of experience in special education. In Spain, 2.7% (n = 3) of the respondents had no experience in special education, 50.4% (n = 57) had 1-10 years of experience, 36.3% (n = 41) had 11-20 years and 8.8% (n = 10) had 21 years or more of experience in special education (see Figure 14).

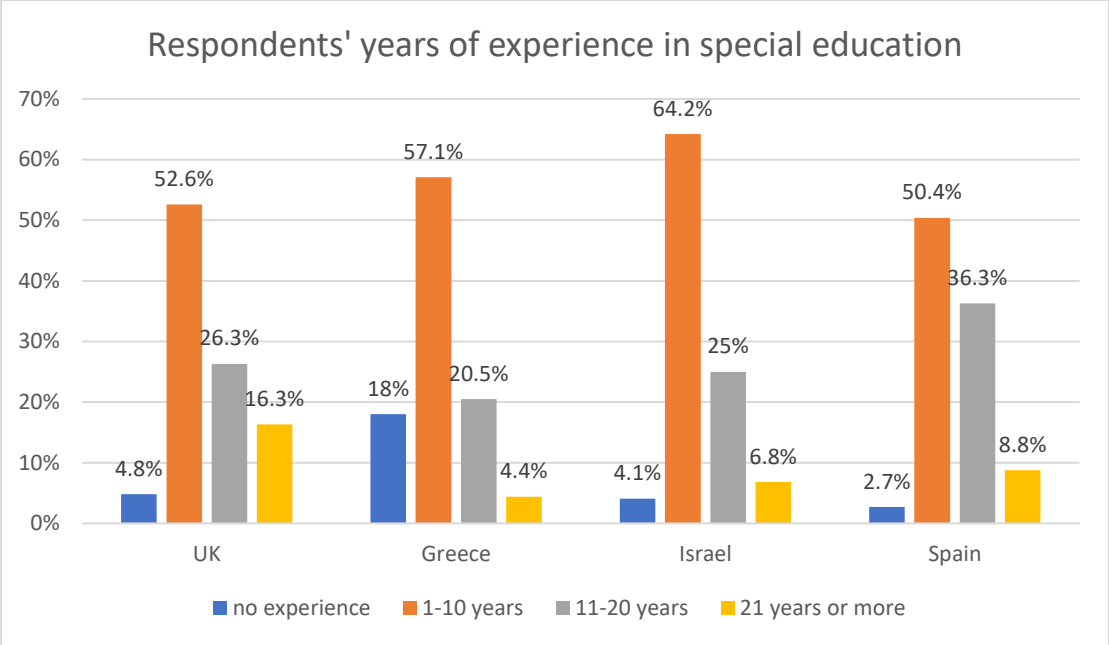


Figure 14. Respondents' years of experience in special education per partner country

We can observe that in all partner countries, more than half of the respondents stated that they have between 1 to 10 years of experience in special education, followed by respondents with 11-20 years of experience.

SA Q7 Respondents' age

With regard to age distribution per partner country, Figure 15 shows that almost one third (29.2%) of the respondents in the UK (n = 61) were between the age of 40-49, 23.4% (n = 49) were between 50-59, 21.5% (n = 45) were between the age of 30-39, 15.3% (n = 32) were between the age of 20-29 and 10.5% (n = 22) were above 60. In Greece, 32.2% of the respondents (n = 66) were between the age of 30-39, 27.3% (n = 56) were between 40-49, 24.4% (n = 50) were between the age of 50-59, 15.6% (n = 32) were between the age of 20-29 and 0.5% (n = 1) was above 60. In Israel, 37.8% of

the respondents (n = 56) were between the age of 30-39, 26.4% (n = 39) were between 40-49, 18.2% (n = 27) were between the age of 20-29, 15.5% (n = 23) were between the age of 50-59 and 2% (n = 3) were above 60. In Spain, 33.6% of the respondents (n = 38) were between the age of 30-39, 31% (n = 35) were between 40-49, 17.7% (n = 20) were between the age of 20-29, 15.9% (n = 18) were between the age of 50-59 and 1.8% (n = 2) were above 60.

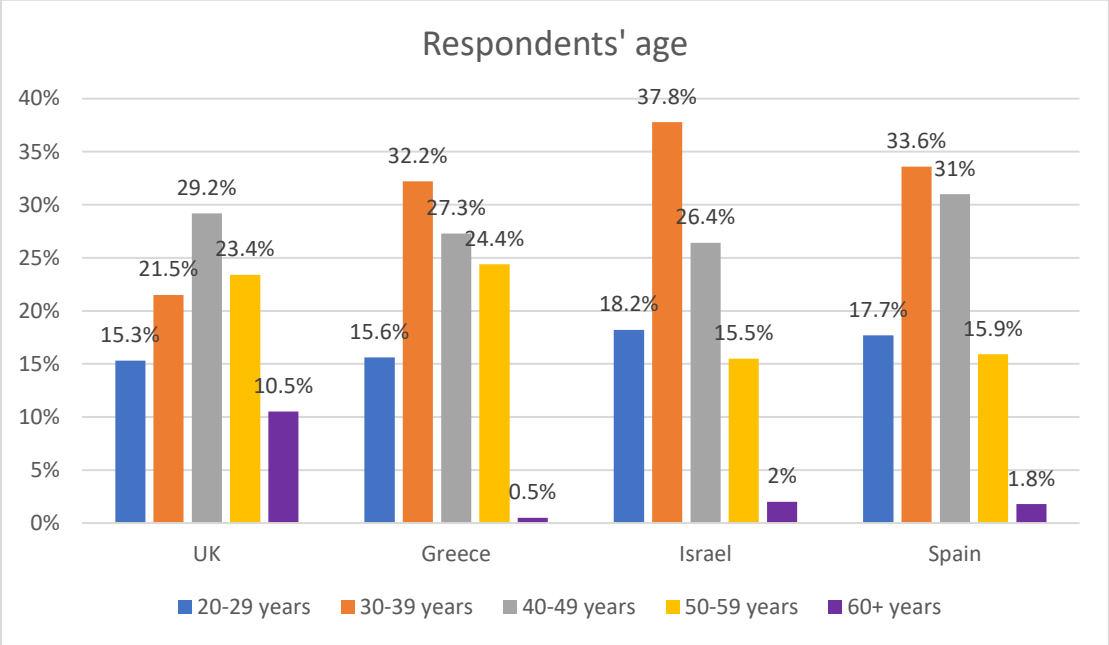


Figure 15. Respondents' age distribution per partner country

To sum up, in Greece, Israel and Spain more than 1/3 of the respondents are between the ages of 30 to 39, while in the UK 1/3 of the respondents are between 40 to 49 years. UK holds the largest percentage of senior respondents (60+ years), while Greece the smallest.

SA Q8 The respondent is asked if he/she is currently working with a pupil / pupils with autism

In the question (Q8) "Are you currently working with a pupil / pupils with autism?" the majority of the respondents in all partner countries answered positively (84.3% [n = 177] of the respondents from the UK, 61% [n = 125] from Greece, 91.2% [n = 135] from Israel and 85.8% [n = 97] from Spain).

SA Q9 The respondent is asked if he/she has worked with a pupil / pupils with autism at some point earlier in his/her career

Additionally, in the question (Q9) “Have you worked a pupil / pupils with autism at some point earlier in your career?”, again, most of the respondents in all partner countries answered positively (98.1% [n = 206] of the respondents from the UK, 83.7% [n = 175] from Greece, 79.1% [n = 117] from Israel and 69% [n = 78] from Spain.

SA Q10 The respondent is asked to describe the severity of autism in that pupil/those pupils currently working or has worked with

Respondents were then asked to indicate the severity of autism in that pupil/pupils currently working or have worked with in the question (Q10): “If you are currently working or have worked with a pupil / pupils with autism, how would you describe the severity of autism in that pupil/those pupils?”. In the UK, almost two thirds (67.5%) of the respondents (n = 142) reported that they have had pupils with multiple levels of autism severity, 13.9% (n = 29) mainly moderate, 12.4% (n = 26) mainly severe, 5.7% (n = 12) mainly mild, while 0.5% (n = 1) did not provide an answer. In Greece, 35.6% of the respondents (n = 73) reported that they have had pupils with multiple levels of autism severity, 24.9% (n = 51) mainly mild, 23.4% (n = 48) mainly moderate, 9.8% (n = 20) mainly severe, while 6.3% (n = 13) did not provide an answer. In Israel, 35.8% of the respondents (n = 53) reported that they have had pupils with multiple levels of autism severity, 22.3% (n = 33) mainly mild, 8.8% (n = 13) mainly moderate, 4.1% (n = 6) mainly severe, while 29.1% (n = 43) did not provide an answer. In Spain, more than half (58.4%) of the respondents (n = 66) reported that they have had pupils with multiple levels of autism severity, 17.7% (n = 20) mainly severe, 16.8% (n = 19) mainly moderate, 5.3% (n = 6) mainly mild while 1.8% (n = 2) did not provide an answer (see Figure 16).

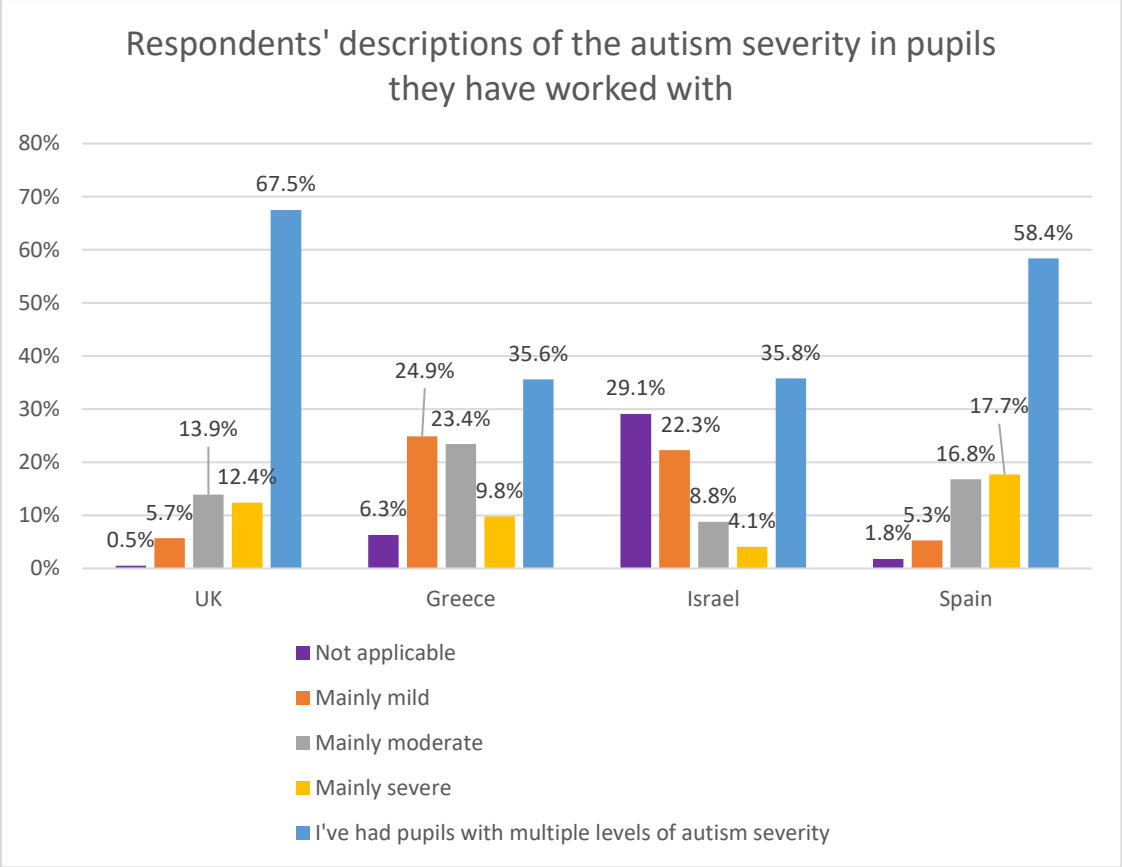


Figure 16. Respondents' descriptions of the autism severity in pupils they have worked with per partner country

The majority of the respondents in all partner countries state that they have had pupils with multiple levels of autism severity.

SA Q11 The respondent is asked if he/she has received any training in autism in addition to that covered through any qualification needed for his/her current role (e.g., teacher training or teaching assistant qualification)

In the question (Q11) "Have you received any training in autism in addition to that covered through any qualification needed for your current role?" respondents had to indicate whether they had received any additional training besides for example, teacher training or teaching assistant qualification. Most respondents answered positively in all partner countries, 88.5% (n = 185) of the respondents from the UK, 68.8% (n = 141) from Greece, and 88.5% (n = 100) from Spain. On the contrary, less than half (43.9%) of the Israeli participants (n = 65) stated that they have received additional training.

SA Q12 The respondent is asked to specify the length of training in autism he/she has received

Respondents were then asked to indicate the length of training received, in the question (Q12) "If you have received training in autism, please specify its length". Respondents could select more than one answer. With regard to the length of training received per partner country, we observe that in the UK most respondents attended a few days training 32.7% (n = 80), 26.5% (n = 65) a few hours, 19.2% (n = 47) a full day, 18% (n = 44) 6 months or longer, 3.3% (n = 8) training was identified as "other" (see Appendix II, Length of training "other", UK) and 0.4% (n = 1) up to 3 months (see Table 1).

Table 1. Length of training in autism, respondents from UK have received

		Responses	
		N	Percent
Length of training in autism received	A few days	80	32.7%
	A few hours	65	26.5%
	A full day	47	19.2%
	6 months or longer	44	18%
	Other	8	3.3%
	Up to 3 months	1	0,4%

In Greece, half of the respondents (53%) attended a few days training (n = 89), 25% (n = 42) a few hours, 16.7% (n = 28) a full day, 4.8% (n = 8) 6 months or longer and 0.6% (n = 1) up to 3 months (see Table 2).

Table 2. Length of training in autism respondents from Greece have received

		Responses	
		N	Percent
Length of training in autism received	A few days	89	53%
	A few hours	42	25%
	A full day	28	16.7%
	6 months or longer	8	4.8%
	Up to 3 months	1	0,6%

In Israel, 12.2% of the respondents attended a few hours seminar (n = 18), 11.5% (n = 17) few days training, 10% (n = 14) training was identified as “other” (see Appendix II, Length of training “other”, Israel), 4.1% (n = 6) 6 months or longer, 1.4% (n = 2) a full day seminar and 1.4% (n = 2) up to 6 months training (see Table 3).

Table 3. Length of training in autism respondents from Israel have received

		Responses	
		N	Percent
Length of training in autism received	A few hours	18	30%
	A few days	17	28.3%
	Other	15	25%
	6 months or longer	6	10%
	A full day	2	3.3%
	Up to 6 months	2	3.3%

In Spain, more than half of the respondents (55.9%) attended a few days seminar (n = 76), 17.3% (n = 24) few hours training, 13.7% (n = 19) a full day seminar, 11.5% (n = 16) 6 months or longer, 2.2% (n = 3) training was identified as “other” (see Appendix II, Length of training “other”, Spain) 0.7% (n = 1) up to 3 months, (see Table 4).

Table 4. Length of training in autism respondents from Spain have received

		Responses	
		N	Percent
Length of training in autism received	A few days	76	55.9%
	A few hours	24	17.3%
	A full day	19	13.7%
	6 months or longer	16	11.5%
	Other	3	2.2%
	Up to 6 months	1	0.7%

In order to better visualize and compare duration of training in autism among partner countries, a few hours and a full day were merged in one category and a few days up to 6 months or longer in another. Results are presented in Figure 17.

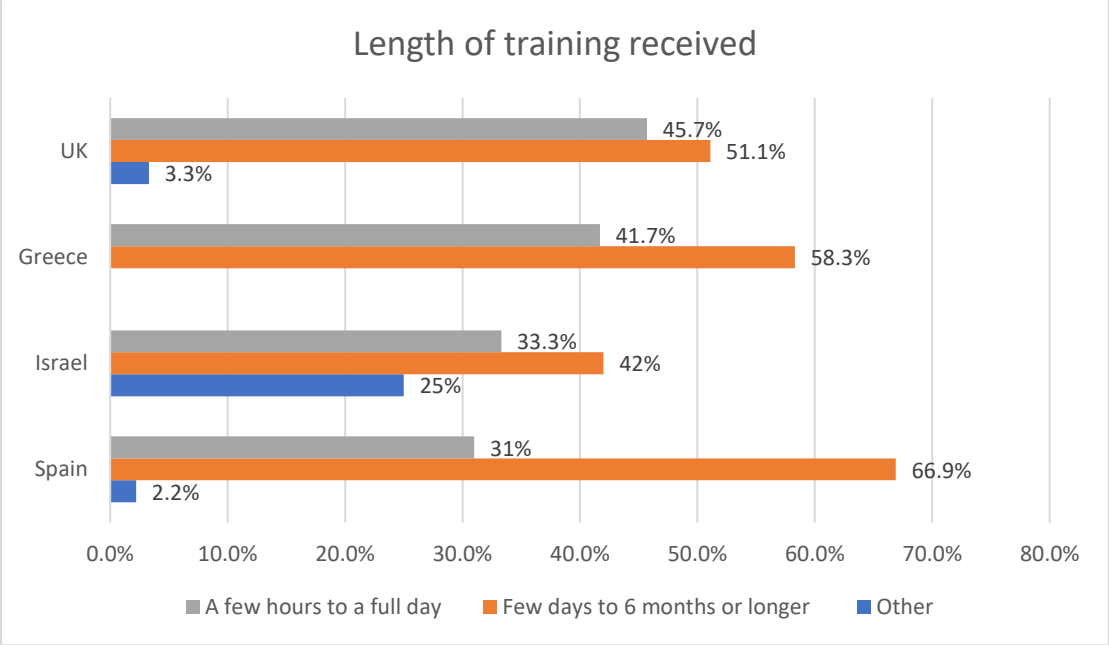


Figure 17. Length of training in autism respondents from all partner countries have received

It can be noticed that the majority of the respondents in all partner countries have received a few days up to 6 months additional training or longer.

4. Academic performance and behavioral patterns in Autism

SB Q1 The respondent is asked to rank indicators in order of their importance with regard to the learning process in autism

In the question (Q1) "With regard to the learning process in autism, rank the following indicators in order of their importance" respondents were asked to rank different indicators in order of their importance, 1= being the most important to 9 up to 12 (according to the indicators every country provided) = being the least important. Furthermore, respondents were given the option to provide additional indicators. Results are presented as the mean value of every indicator. Mean values closer to 1 are higher in the rank. However, in order to present the results in a descending order having the higher values first on the left of the stacked data figure, the mean value of each indicator was subtracted from the total number of indicators every partner country had. More specifically, for the UK (see Figure 18), the most important indicator was *Communication and/or social difficulties* (M = 7.6), followed by *Attention difficulties*

(M = 5.8) and *Challenging behavior/self-injurious behavior (*M = 5.5). For indicators that were identified as "other" see Appendix II, Indicators "other", UK. Similarly, for Greece, the most important indicator was *Communication and/or social difficulties* (M = 6.2), followed by *Delayed speech or no speech* (M = 5.4) and *Attention difficulties* (M = 4.7). For indicators that were identified as "other" see Appendix II, Indicators "other", Greece. For Israel, the most important indicator was *Communication and/or social difficulties* (M = 7.6), followed by *Attention difficulties* (M = 7.3) and *Challenging behavior/self-injurious behavior* (M = 7.1). For indicators that were identified as "other" see Appendix II, Indicators "other", Israel. For Spain, the most important indicator was *Communication and/or social difficulties* (M = 8.4), followed by *Delayed speech or no speech* (M = 7.6) and *Attention difficulties* (M = 6.8). For indicators that were identified as "other" see Appendix II, Indicators "other", Spain.

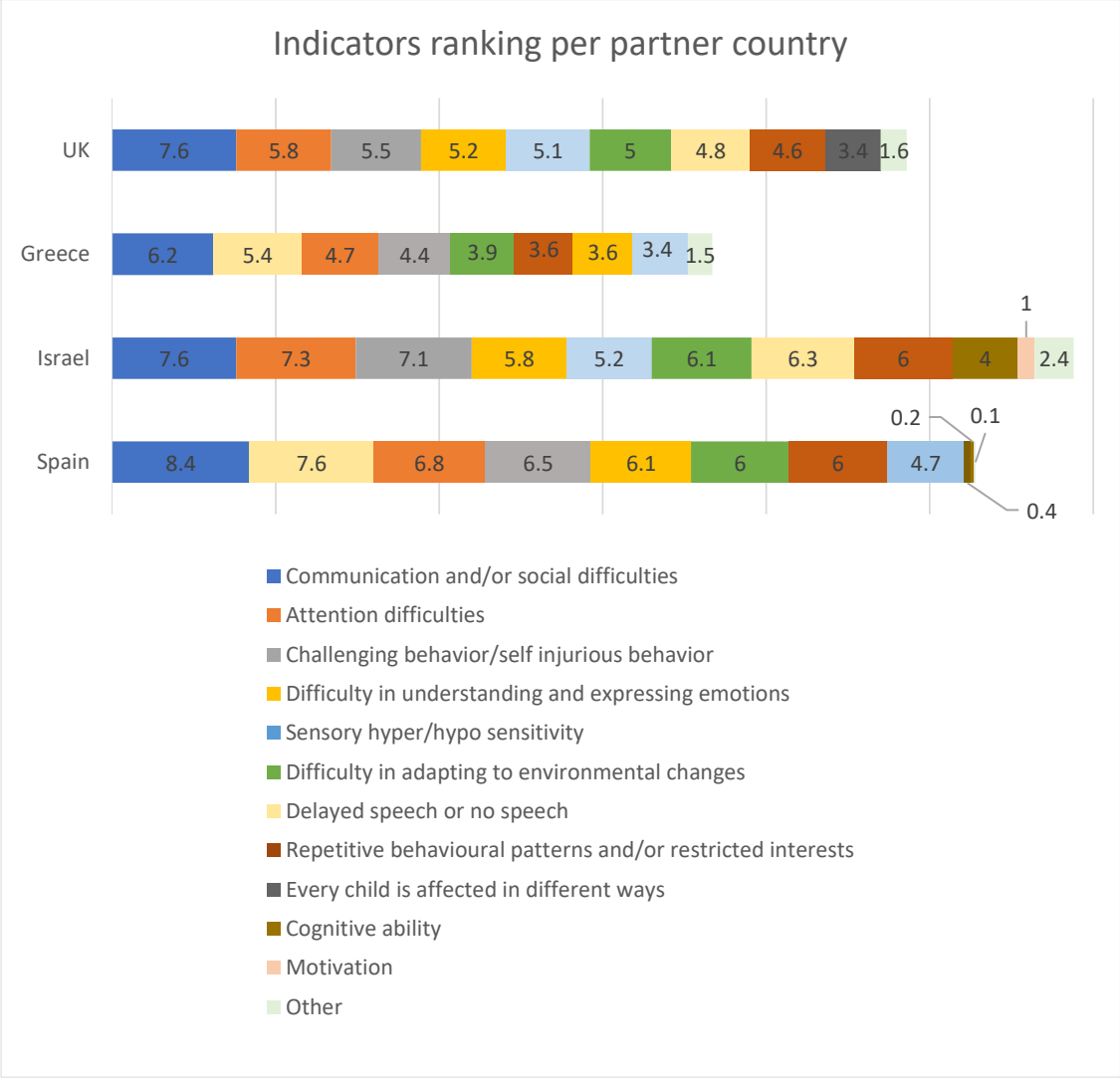


Figure 18. Indicators ranking in order of their importance with regard to the learning process in autism for the UK

Respondents from the UK and Israel rated attention difficulties as the second most common difficulties in children with autism after communication and social difficulties, whereas for respondents in Greece and Spain attention difficulties appeared as the third most common area of difficulty for children with autism after communication and social difficulties and delayed or no speech.

SB Q2 The respondent is asked what attention means for him/her

In the two open-ended questions that followed, respondents were firstly asked to provide a brief personal definition of attention and secondly to state the extent of which attention is relevant in the context of autism while justifying their responses. Thus, in the question (Q2) "What does attention mean for you?" respondents were asked to define what attention means for them.

More specifically, in the UK, 17.7% (n = 37) of the respondents did not provide a definition, while the qualitative analysis of the remaining led to the emergence of 20 categories (see Table 5). 26.2% of the respondents (n = 75) stated that attention means *Concentration /engagement/focus on task/activity/person*, 18.5% (n = 53) stated it means *Maintaining/sustaining focus, engagement, interest/staying on task/staying focused, sustained attention* and 7% (n = 20) that it means *Attending to/noticing/paying attention to an object/a person, instructions, teaching*.

Table 5. "What does attention mean for you?" categories for the UK respondents

Q2 Categories: What does attention mean for you?	N	Percent
1. Concentration/engagement/focus on task/activity /person	75	26.2%
2. Maintaining/sustaining focus, engagement, interest/staying on task/staying focused, sustained attention	53	18.5%
3. Attending to/noticing/paying attention to an object/a person, instructions, teaching	20	7%
4. Interest/ excitement	15	5.2%
5. Links with learning	15	5.2%
6. Other (alertness, exploring, extracting meaning, monotropic attention, multi-tasking, observing, recognising the needs of others, remembering, showing preference, thinking, tuning in, turn-taking, show a preference, waiting for something to happen, staff in charge of autistic children's attention).	14	4.9%
7. Attention control	12	4.2%
8. Listening	12	4.2%
9. Joint attention/shared attention	10	3.5%
10. Awareness/acknowledging the outside world	8	2.8%
11. Complete an activity/task	8	2.8%
12. Taking In/processing information	8	2.8%
13. Understanding	8	2.8%
14. Links with communication and/or social understanding/interactions	6	2.1%
15. Eye contact/looking/observing	6	2.1%
16. Responding	5	1.7%
17. Following/acting on something (e.g., instructions, directions)	4	1.4%
18. Emotional regulation	3	1%
19. Links with sensory needs	3	1%
20. Executive function	1	0.3%

In Greece, 9.3% (n = 19) of the respondents did not provide a definition, while the qualitative analysis for the remaining led to the emergence of 18 categories (see Table 6). 20.4% of the respondents (n = 62) stated that attention means *Maintaining/sustaining focus, engagement, interest/staying on task/ staying focused, sustained attention*, 14.8% (n = 45) said that attention is Concentration*/engagement/focus on task/activity /person*, and 8.9% (n = 27) mentioned *Attention control*.

Table 6. "What does attention mean for you?" categories for Greek respondents

Q2 Categories: What does attention mean for you?	N	Percent
1. **Maintaining/sustaining focus, engagement, interest/staying on task/ staying focused, sustained attention**	62	20.4%
2. Concentration/engagement/focus on task/activity/person	45	14.8%
3. Attention control	27	8.9%
4. Important cognitive skill	23	7.6%
5. Links with learning	21	6.9%
6. Taking in/processing information	15	4.9%
7. Understanding	15	4.9%
8. Complete an activity/task	15	4.9%
9. Other (alertness, extracting meaning, remembering, waiting for something to happen, staff in charge of autistic children's attention, combining information and knowledge, amount of engagement time for an activity, activation of complex cognitive and sensory processes, responding)	15	4.9%
10. Links with communication and/or social understanding/interactions	13	4.3%
11. Eye Contact/looking/ observing	10	3.3%
12. Following/acting on something (e.g. instructions, directions)	8	2.6%
13. Awareness/acknowledging the outside world	7	2.3%
14. Interest/ excitement	7	2.3%
15. Attending to/noticing/paying attention to an object/a person, a person, instructions, teaching	6	2%
16. Joint attention/shared attention	6	2%
17. Listening	5	1.6%
18. Links with sensory needs	4	1.3%

In Israel, 3.4% (n = 5) of the respondents did not provide a definition, while the qualitative analysis of the remaining led to the emergence of 19 categories (see Table 7). 17.6% (n = 50) of the respondents stated that attention means *Maintaining/sustaining focus, engagement, interest/staying on task/ staying focused, sustained attention*, while 15.1% (n = 43) mentioned *Attention control*, and 12.7% (n=36) said that attention is Concentration*/engagement/focus on task/activity /person*.

Table 7. "What does attention mean for you?" categories for Israeli respondents

Q2 Categories: What does attention mean for you?	N	Percent
1. **Maintaining/sustaining focus, engagement, interest/staying on task/ staying focused, sustained attention**	50	17.6%
2. Attention control	43	15.1%
3. Concentration/engagement/focus on task/activity/person	36	12.7%
4. Attending to/noticing/paying attention to an object/a person, a person, instructions, teaching	27	9.5%
5. Links with learning	19	6.7%
6. Links with communication and/or social understanding/interactions	15	5.3%
7. Following/acting on something (e.g. instructions, directions)	12	4.2%
8. Listening	11	3.9%
9. Taking in/processing information	11	3.9%
10. Understanding	11	3.9%
11. Performing optimally/independently/appropriately	9	3.2%
12. Executive function	8	2.8%
13. Responding	8	2.8%
14. Awareness/acknowledging the outside world	7	2.5%
15. Complete an activity/task	6	2.1%
16. Sitting still/ refraining from talking	5	1.8%
17. Other (alertness, exploring, extracting meaning, monotropic attention, multi-tasking, observing, recognising the needs of others, remembering, showing preference, thinking, tuning in, turn-taking, show a preference, waiting for something to happen, staff in charge of autistic children's attention, ability, benefiting from mediation, intact motor functioning)	3	1.1%
18. Links with sensory needs	2	0.7%
19. Interest/ excitement	1	0.4%

In Spain, 11.5% (n = 13) of the respondents did not provide a definition and the qualitative analysis of the remaining led to the emergence of 18 categories (see Table 8). 25.3% of the respondents (n=25) stated that attention means *Concentration /engagement/focus on task/activity /person*, 14.1% (n = 14) stated that it means to *Select a stimulus among others* and 12.1% (n =12) said that attention holds *Links with learning*.

Table 8. "What does attention mean for you?" categories for Spanish respondents

Q2 Categories: What does attention mean for you?	N	Percent
1. Concentration/engagement/focus on task/activity /person	25	25.3%
2. Select a stimulus among others	14	14.1%
3. Links with learning	12	12.1%
4. Maintaining/sustaining focus, engagement, interest/staying on task/staying focused, sustained attention	12	12.1%
5. Interest/ excitement	5	5.1%
6. Taking In/processing information	5	5.1%
7. Understanding	5	5.1%
8. Awareness/acknowledging the outside world	4	4%
9. Complete an activity/task	3	3%
10. Following/acting on something (e.g. instructions, directions)	2	2%
11. Joint attention/shared attention	2	2%
12. Listening	2	2%
13. Responding	2	2%
14. Other (process of opening towards the environment, thinking, tuning in, waiting for something to happen, motivation).	2	2%
15. Attending to/noticing/paying attention to an object/a person, instructions, teaching	1	1%
16. Eye contact/looking/observing	1	1%
17. A specific skill	1	1%
18. Teacher-student connection	1	1%

On the whole, the majority of the respondents in all countries stated that attention means: *Concentration /engagement/focus on task/activity/person/sustaining focus/ interest/sustained attention.*

SB Q3 The respondent is asked about the extent of which attention is relevant in the context of autism, justifying his/her response

In the question (Q3) "To what extent is attention relevant in the context of autism? Please justify your response", respondents were asked to state the extent to which attention is relevant in the context of autism for them while justifying their response. More specifically, in the UK 31.6% (n = 66) of the respondents did not provide an answer, while the qualitative analysis of the remaining led to the emergence of 20 categories (see Table 9). Thus, 18.7% (n = 50) of the respondents believe that attention is relevant in the context of autism with regard to *Links with learning*, 14.6% (n = 39) mentioned *Attention difficulties in autism* and 12.4% (n = 33) referred to *Links with social communication and interactions*.

Table 9. "To what extent is attention relevant in the context of autism?" categories for the UK respondents

Q3 Categories: To what extent is attention relevant in the context of autism?	N	Percent
1. Links with learning	50	18.7%
2. Attention difficulties in autism (e.g. sustained attention, attention shifting/disengagement, shared attention, JA, attention to detail, including monotropism and executive function, attend activities selected by others)	39	14.6%
3. Links with social communication and interactions	33	12.4%
4. Special interests/motivation	30	11.2%
5. Sensory processing difficulties	17	6.4%
6. The influence of the environment	12	4.5%
7. Way attention should be trained in autism (simplify tasks, offer more breaks, flexibility of approaches, differentiating curriculum)	12	4.5%
8. Individual differences	12	4.5%
9. Anxiety/confusion/emotional dysregulation	9	3.4%
10. Rigidity of thinking and behaviour	8	3.0%
11. Attention might manifest/look different in people with autism	8	3.0%
12. Broad life experiences and the world around them	7	2.6%
13. Other (e.g. attention and adaptability, attention and transitions, attention as a strength in autism, behavioural regulation, links with information processing, links with understanding, regulation of thoughts and actions)	7	2.6%
14. The influence of other people (e.g. adult-led activities)	6	2.2%
15. Attention should go beyond special interests	4	1.5%
16. Emotional/ self- regulation	4	1,5%
17. Links with challenging behaviour/self-stimulation/ behavioural difficulties	3	1.1%
18. Attention is polarised in autism (hyper focus or lose interest easily)	2	0.7%
19. Complexity of attention/misunderstandings	2	0.7%
20. Attention is not relevant to autism	2	0.7%

In Greece, 26% (n = 53) of the respondents did not provide an answer, while the qualitative analysis of the remaining led to the emergence of 18 categories (see Table 10). 19.8% of the respondents (n = 52) stated that attention is relevant in the context of autism with regard to *Links with learning*, 17.6% (n = 46) mentioned *Attention difficulties in autism*, and 14.1% (n = 37) think attention holds *Links with social communication and interactions*.

Table 10. "To what extent is attention relevant in the context of autism?" categories for the Greek respondents

Q3 Categories: To what extent is attention relevant in the context of autism? Please justify your response.	N	Percent
1. **Links with learning**	52	19.8%
2. Attention difficulties in autism (e.g., sustained attention, attention shifting/disengagement, shared attention, JA, attention to detail, including monotropism and executive function, attend activities selected by others)	46	17.6%
3. Links with social communication and interactions	37	14.1%
4. The influence of other people (e.g., adult-led activities)	16	6.1%
5. Special interests/motivation	15	5.7%
6. Other (following instructions, eye contact, alertness, imitation, safety, links with understanding, responding, cognitive processes)	14	5.3%
7. Behavioral regulation	12	4.6%
8. Attention is polarised in autism (hyper focus or lose interest easily)	11	4.2%
9. Attention is not relevant to autism	10	3.8%
10. Links with information processing	10	3.8%
11. Links with task completion	9	3.4%
12. The influence of the environment	6	2.3%
13. Way attention should be trained in autism (simplify tasks, offer more breaks, flexibility of approaches, differentiating curriculum)	5	1.9%
14. Broad life experiences and the world around them	5	1.9%
15. Sensory processing difficulties	5	1.9%
16. Emotional/ self- regulation	4	1.5%
17. Attention might manifest/look different in people with autism	3	1.1%
18. Anxiety/confusion/emotional dysregulation	2	0.8%

In Israel, 5.4% (n = 8) of the respondents did not provide an answer, while the qualitative analysis of the remaining led to the emergence of 21 categories (see Table 11). 14.5% (n = 36) of the respondents stated that attention is relevant in the context of autism with regard to *Links with learning* and *Links with social communication and interactions*, 11.2% (n = 28) mentioned *Attention difficulties in autism*, and 8% (n = 20) answered *Relevant with no further explanation /relevant out of experience.*

Table 11. "To what extent is attention relevant in the context of autism?" categories for the Israeli respondents

Q3 Categories: To what extent is attention relevant in the context of autism?	N	Percent
1. Links with learning	36	14.5%
2. Links with social communication and interactions	36	14.5%
3. Attention difficulties in autism (e.g., sustained attention, attention shifting/disengagement, shared attention, JA, attention to detail, including monotropism and executive function, attend activities selected by others)	28	11.2%
4. Relevant with no further explanation /relevant out of experience	20	8%
5. Distraction/stimuli filtering	17	6.8%
6. Slightly relevant	16	6.4%
7. Disconnection/introversion into inner world	15	6%
8. Attention amplifies difficulties or autistic symptoms	15	6%
9. Complexity of attention/misunderstandings	10	4%
10. Way attention should be trained in autism (simplify tasks, offer more breaks, flexibility of approaches, differentiating curriculum)	9	3.6%
11. Other (e.g., attention and adaptability, attention and transitions, attention as a strength in autism, behavioural regulation, links with information processing, links with understanding, regulation of thoughts and actions, hyperactivity, difficulties in different processes)	8	3.2%
12. Broad life experiences and the world around them	7	2.8%
13. Anxiety/confusion/emotional dysregulation	6	2.4%
14. Sensory processing difficulties	6	2.4%
15. Individual differences	5	2%
16. Attention is polarised in autism (hyper focus or lose interest easily)	3	1.2%
17. Links with challenging behaviour/self-stimulation/ behavioural difficulties	3	1.2%

18. Emotional/ self- regulation	3	1.2%
19. The influence of the environment	3	1.2%
20. Rigidity of thinking and behaviour	2	0.8%
21. The influence of other people (e.g. adult-led activities)	1	0.4%

In Spain, 7.1% (n = 8) of the respondents did not provide an answer, while the qualitative analysis of the remaining led to the emergence of 17 categories (see Table 12). Almost one third (32.4%) of the respondents (n = 33) stated that attention is relevant in the context of autism with regard to *Links with learning*, 12.7% (n = 13) mentioned that attention is *Very relevant* in the context of autism and 10.8% (n = 11) referred to *Attention difficulties in autism.*

Table 12. "To what extent is attention relevant in the context of autism?" categories for the Spanish respondents

Q3 Categories: To what extent is attention relevant in the context of autism? Please justify your response.	**N**	**Percent**
1. **Links with learning**	33	32.4%
2. Very relevant	13	12.7%
3. Attention difficulties in autism (e.g. sustained attention, attention shifting/disengagement, shared attention, JA, attention to detail, including monotropism and executive function, attend activities selected by others)	11	10.8%
4. Teacher-student connection and teacher-student relationship	9	8.8%
5. Special interests/motivation	7	6.9%
6. Way attention should be trained in autism (simplify tasks, offer more breaks, flexibility of approaches, differentiating curriculum)	5	4.9%
7. Broad life experiences and the world around them	4	3.9%
8. Other (following instructions, eye contact, alertness, imitation, safety, links with understanding, responding, cognitive processes)	4	3.9%
9. Links with task completion	4	3.9%
10. links with challenging behaviour/self-stimulation/ behavioural difficulties	2	2%
11. Sensory processing difficulties	2	2%
12. Links with information processing	2	2%

13. Secondary difficulty in autism (consequence of communication and sensory difficulties)	2	2%
14. Attention might manifest/look different in people with autism	1	1%
15. Links with social communication and interactions	1	1%
16. Attention is not relevant to autism	1	1%
17. The influence of the environment	1	1%

Therefore, the majority of the respondents in all partner countries stated that there are links between attention and learning for children with autism.

SB Q4 The respondent is asked to read statements and state whether he/she agrees that the behaviors they describe are related to attention in autism. If they are unsure about a statement, they select "I am not sure"

In order to examine respondents' perceptions regarding attention in autism, respondents were asked to read statements and state whether the behaviors they described were related to attention in autism. This question (Q4 "Please read the following statements and state whether you agree the behaviors they describe are related to attention in autism") consisted of 11 forced choice 3-point Likert scale items ranging from agree, disagree to neutral ('I am not sure'). The total number of the respondents who answered each question is given, and the percentage is calculated out of the total of valid responses for each question. Due to malfunction in the Israeli questionnaire, the 3 last statements were omitted and for that reason results are presented for the other 3 partner countries and for Israel only for the items examined.

In the statement "Shift eye gaze or turn head towards a specific stimulus" (see Figure 19), the majority (71.2%) of the UK (total valid answers, n = 208) respondents (n = 148) responded that they agree, 17.3% (n = 36) that they disagree and 11.5% (n = 24) they are not sure. 80.2% of the Greek (total valid answers, n = 202) respondents (n = 162) also agree, 14.4% (n = 29) disagree and 5.4% (n = 11) are not sure. 60.3% of the respondents (total valid answers, n = 146) in Israel (n = 88) agree, 20.5% (n = 30) disagree and 19.2% (n = 28) are not sure. In Spain (total valid answers, n = 109), 78.9% of the respondents (n = 86) agree, 10.1% (n = 11) disagree and 11% (n = 12) are not sure.

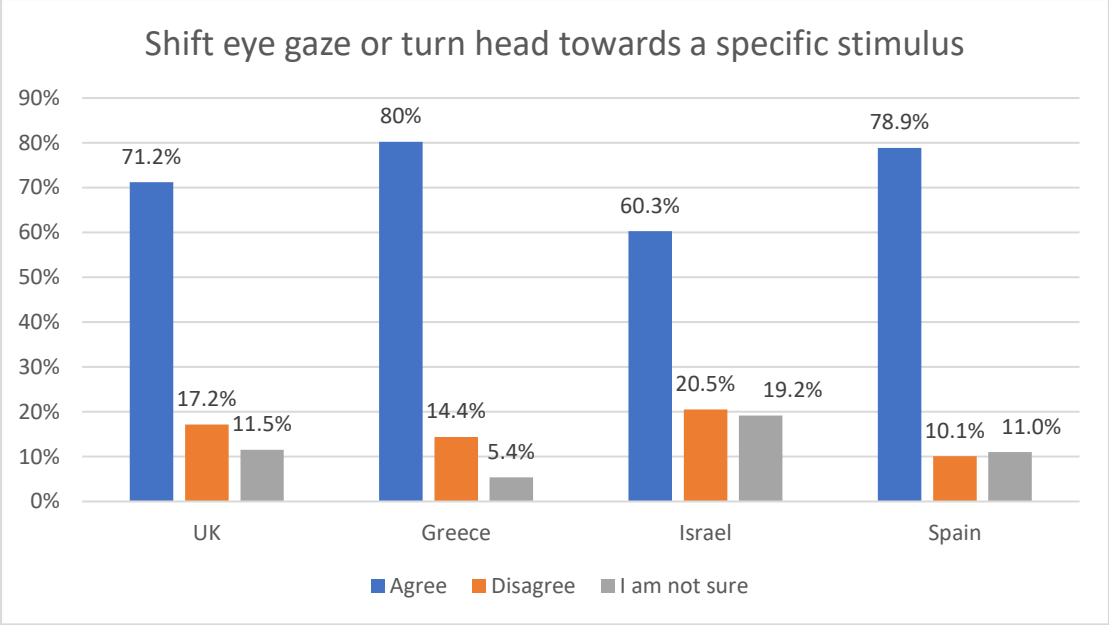


Figure 19. Shift eye gaze or turn head towards a specific stimulus, for all partner countries

Therefore, the respondents in all four countries stated that they agree with the statement "Shift eye gaze or turn head towards a specific stimulus".

In the statement “Focus only on the stimuli that is relevant for the current task” (see Figure 20), 57.7% of the UK (total valid answers, n = 208) respondents (n = 120) responded that they agree, 32.7% (n = 68) disagree and 9.6% (n = 20) are not sure. 55.1% of the Greek (total valid answers, n = 198) respondents (n = 109) agree, 32.8% (n = 65) disagree and 12.1% (n = 24) are not sure. In Israel (total valid answers, n = 147), half (49.7%) of the respondents (n = 73) agree, 32% (n = 47) disagree and 18.4% (n = 27) are not sure. Finally, 63.6% of the Spanish (total valid answers, n = 107) respondents (n = 68) agree, 25.2% (n = 27) disagree and 11.2% (n = 12) are not sure.

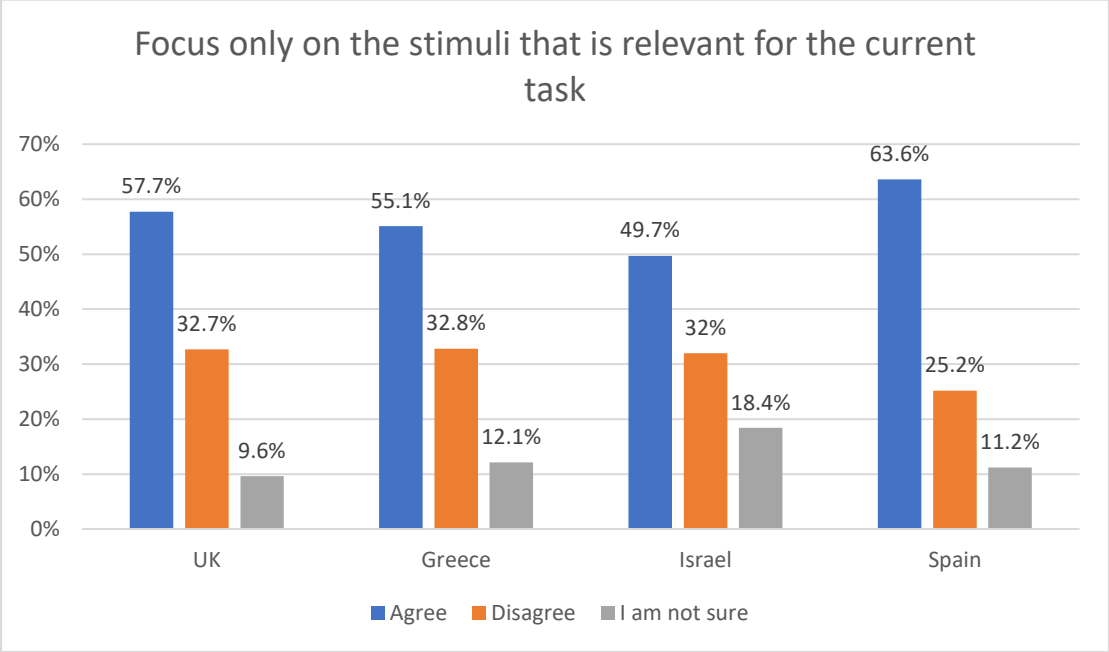


Figure 20. Focus only on the stimuli that is relevant for the current task, for all partner countries

Thus, the majority of the respondents in all four countries stated that they agree with the above statement.

With regard to the statement “Withhold an irrelevant response” (see Figure 21), in UK (total valid answers, n = 209), 32.5% (n = 68) of the respondents responded that they agree, 42.1% (n = 88) disagree and 25.4% (n = 53) are not sure. In Greece (total valid answers, n = 200), 38% (n = 76) of the respondents agree, 32% (n = 64) disagree and 30% (n = 60) are not sure. In Israel (total valid answers, n = 146), more than half (54.1%) of the respondents (n = 79) agree, 23.3% (n = 34) disagree and 22.6% (n = 33) are not sure. Similarly, 54.5% of the Spanish (total valid answers, n = 110) respondents (n = 60) agree, 27.3% (n = 30) disagree and 18.2% (n = 20) are not sure.

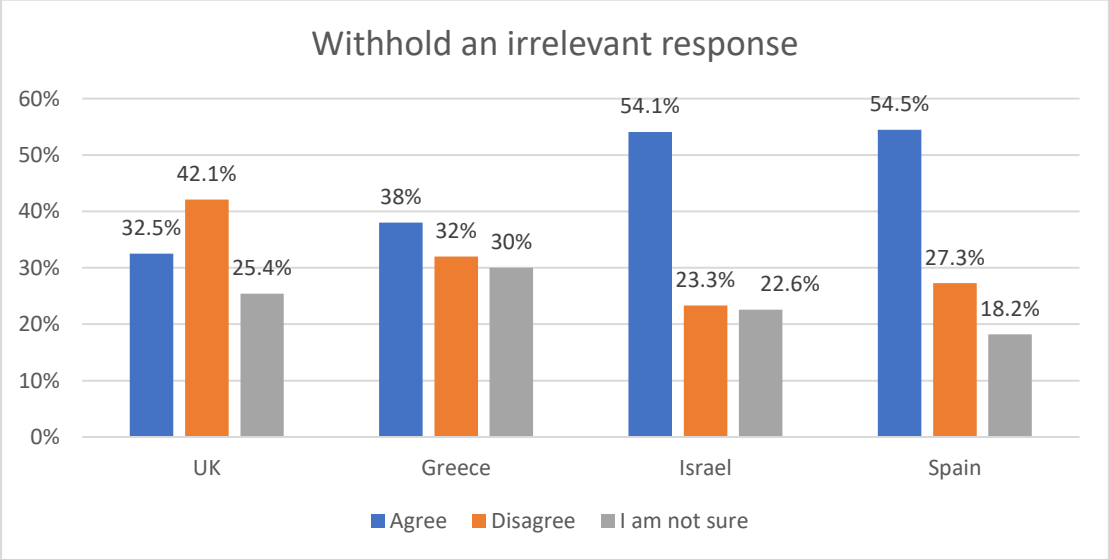


Figure 21. Withhold an irrelevant response, for all partner countries

A comparison point concerning the statement “Withhold an irrelevant response” is that the majority of the respondents in Greece, Israel and Spain stated that they agree, while the majority of the UK respondents stated that they disagree.

In the statement “Change what one is currently focusing on (disengage from one thing and move to a different thing)” (see Figure 22), 68.4% of the UK (total valid answers, n = 209) respondents (n = 143) responded that they agree, 21.1% (n = 44) disagree and 10.5% (n = 22) are not sure. In Greece (total valid answers, n = 201), 75.6% of the respondents (n = 152) agree, 13.9% (n = 28) disagree and 10.4% (n = 21) are not sure. Similarly, 76.7% of the respondents in Israel (total valid answers, n = 146), (n = 112) agree, 13% (n = 19) disagree and 10.3% (n = 15) are not sure. In Spain (total valid answers, n = 108), 74.1% of the respondents (n = 80) agree, 16.7% (n = 18) disagree and 9.3% (n = 10) are not sure.

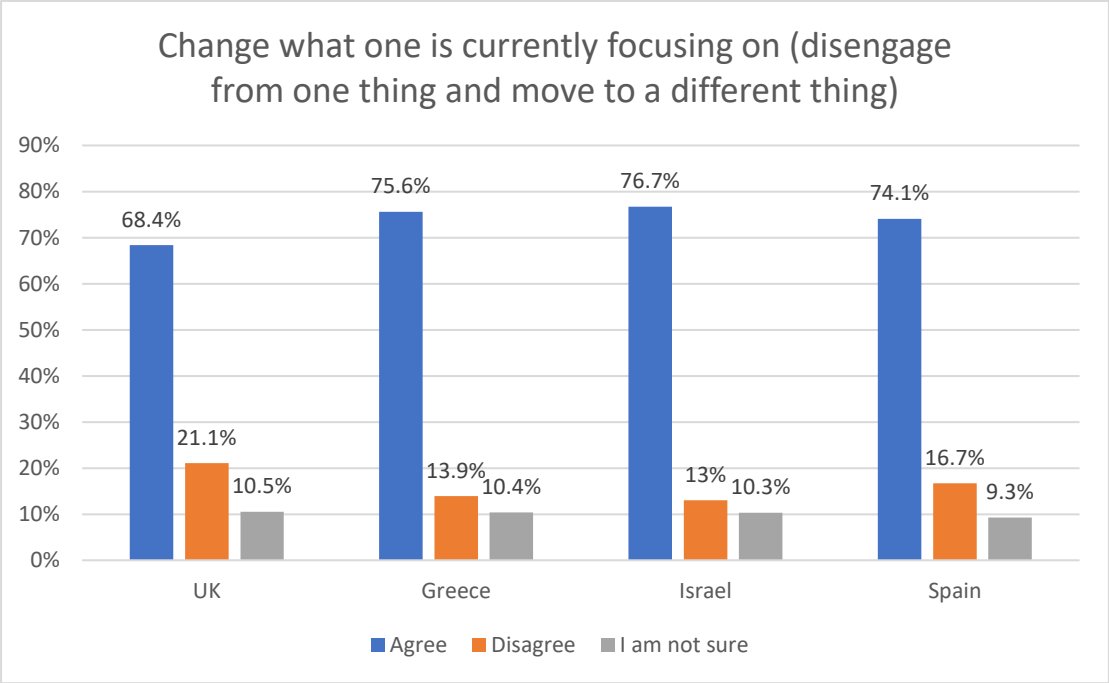


Figure 22. Change what one is currently focusing on (disengage from one thing and move to a different thing), for all partner countries

Consequently, the majority of the respondents in all four countries believe that the behavior described by the statement “Change what one is currently focusing on (disengage from one thing and move to a different thing)” relates to the attention in autism and stated that they agree.

In the statement “Maintain focus over time on a specific task” (see Figure 23), 74.5% of the UK (total valid answers, n = 208) respondents (n = 155) responded that they agree, 17.8% (n = 37) disagree and 7.7% (n = 16) are not sure. In Greece (total valid answers, n = 199), 65.3% (n = 130) agree, 26.6% (n = 53) disagree and 8% (n = 16) are not sure. In Israel (total valid answers, n = 146), 60.3% (n = 88) agree, 29.5% (n = 43) disagree and 10.3% (n = 15) are not sure. Finally, 62.4% of the Spanish (total valid answers, n = 109) respondents (n = 68) agree, 32.1% (n = 35) disagree and 5.5% (n = 6) are not sure.

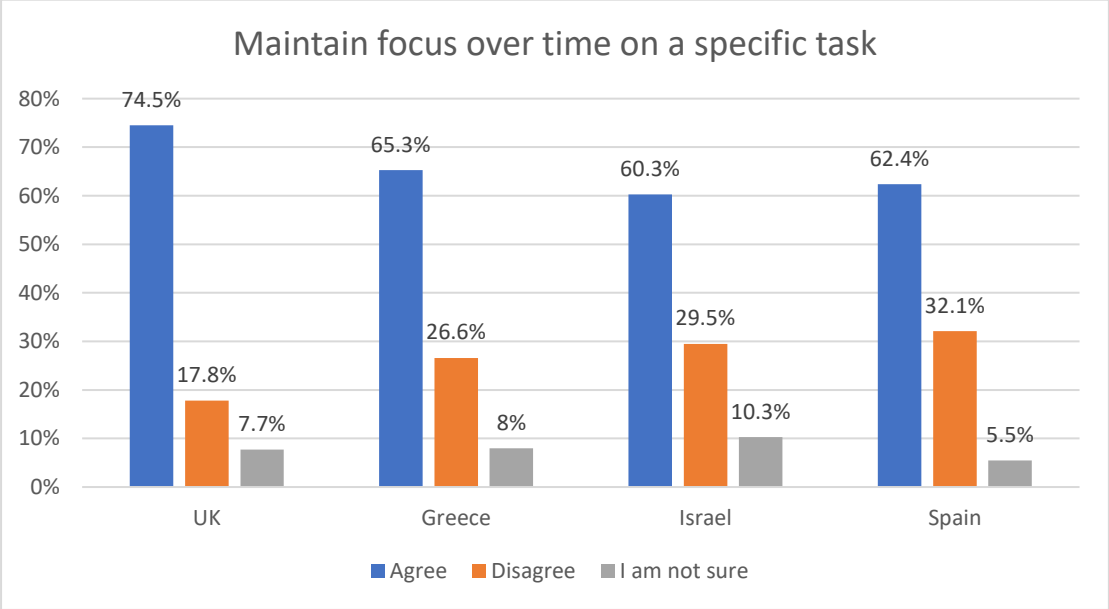


Figure 23. Maintain focus over time on a specific task, for all partner countries

As a result, the majority of the respondents in all four countries stated that they agree with the statement “Maintain focus over time on a specific task”.

In the statement “Focus on something because another person is focusing on it” (see Figure 24), 34.8% of the UK (total valid answers, n = 207) respondents (n = 72) responded that they agree, 50.2% (n = 104) disagree and 15% (n = 31) are not sure. In Greece (total valid answers, n = 200), 35.5% of the respondents (n = 71) agree, 43% (n = 86) disagree and 21.5% (n = 43) are not sure. Likewise, 35.4% of the Israeli (total valid answers, n = 147) respondents (n = 52) agree, 44.9% (n = 66) disagree and 19.7% (n = 29) are not sure. Finally, in Spain (total valid answers, n = 107), 32.7% (n = 35) agree, 50.5% (n = 54) disagree and 16.8% (n = 18) are not sure.

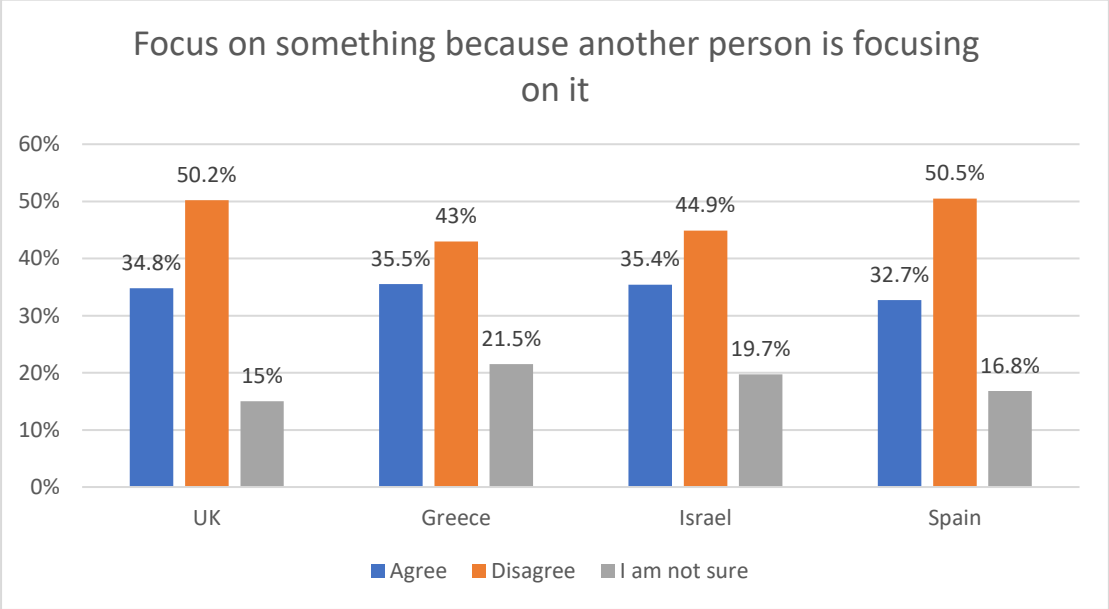


Figure 24. Focus on something because another person is focusing on it, for all partner countries

Therefore, the majority of the respondents in all four countries stated that they disagree with the statement «Focus on something because another person is focusing on it”, thus perceiving the specific behavior as irrelevant to attention.

In the statement “Attention is the same in all pupils with autism” (see Figure 25), only one (0.5%) UK respondent (total valid answers, n = 209) responded that agree, 99% (n = 207) disagree and 0.5% (n = 1) is not sure. In Greece (total valid answers, n = 202), a very small percent (1.5%) of the respondents (n = 3) agree, 94.6% (n = 191) disagree and 4% (n = 8) are not sure. Also, in Israel (total valid answers, n = 146), 1.4% (n = 2) agree, 93.2% (n = 136) disagree and 5.5% (n = 8) are not sure. Finally, in Spain (total valid answers, n = 108), 0.9% (n = 1) agree, 98.1% (n = 106) disagree and 0.9% (n = 1) is not sure.

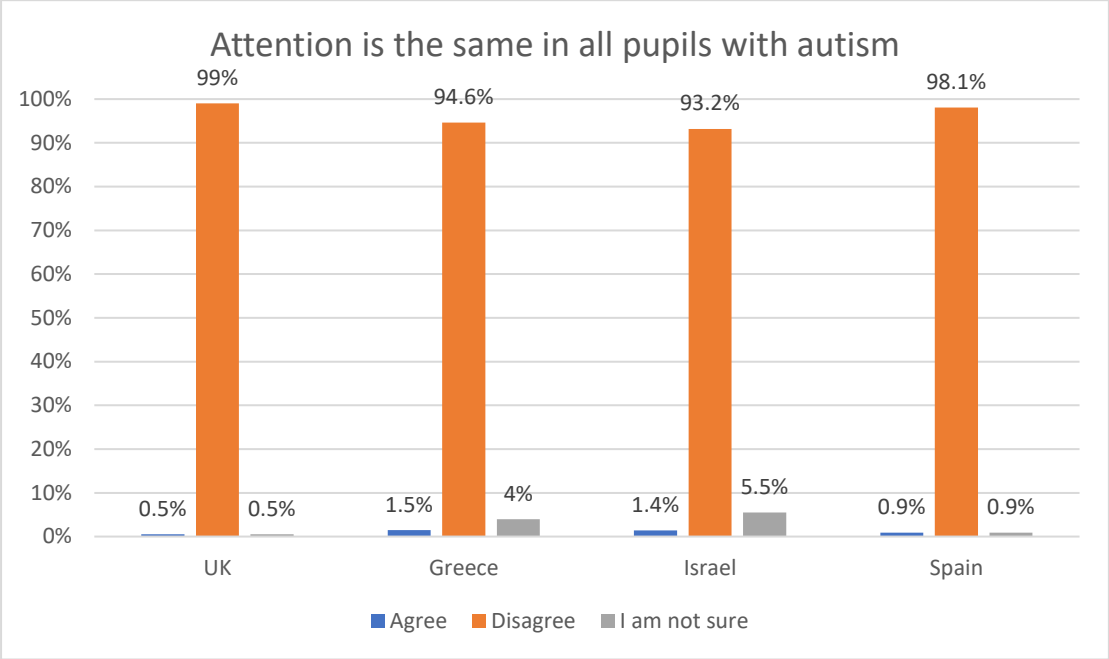


Figure 25. Attention is the same in all pupils with autism, for all partner countries

Hence, the majority of the respondents in all four countries stated that they disagree with the statement “Attention is the same in all pupils with autism”.

In the statement “It is easier for pupils with autism to focus on (or shift their eye gaze to) objects rather than people” (see Figure 26), more than half (55%) of the UK (total valid answers, n = 209) respondents (n = 115) responded that they agree, 26.3% (n = 55) disagree and 18.7% (n = 39) are not sure. In Greece (total valid answers, n = 202), 74.8% (n = 151) agree, 12.4% (n = 25) disagree and 12.9% (n = 26) are not sure. In Israel (total valid answers, n = 147), 25.2% (n = 37) agree, 53.7% (n = 79) disagree and 21.1% (n = 31) are not sure. In Spain (total valid answers, n = 107), 67.3% (n = 72) agree, 17.8% (n = 19) disagree and 15% (n = 16) are not sure.

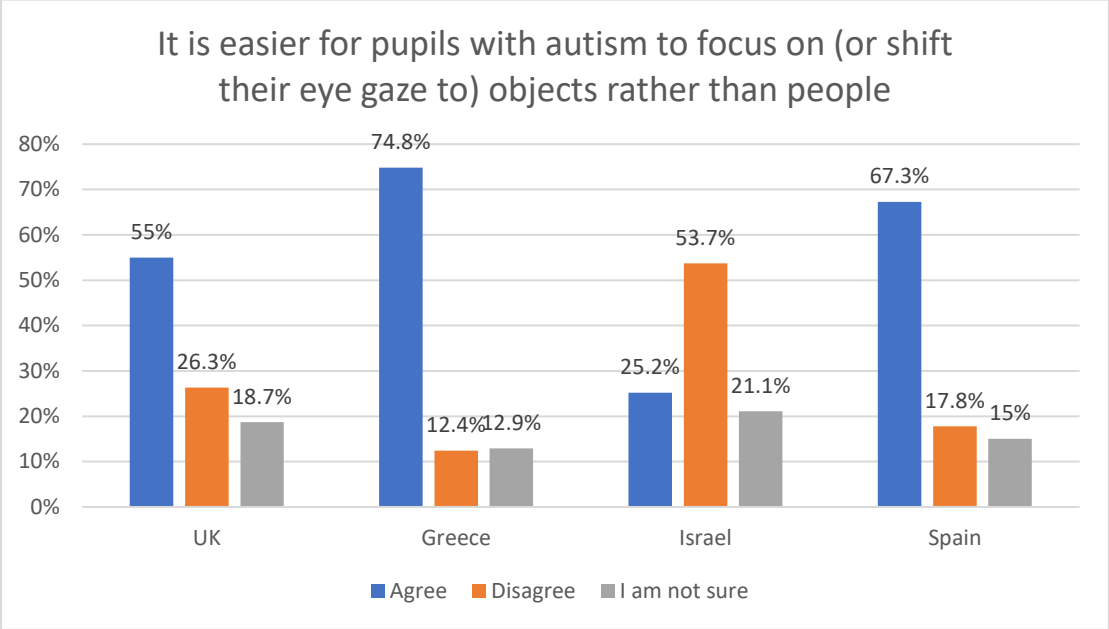


Figure 26. It is easier for pupils with autism to focus on (or shift their eye gaze to) objects rather than people, for all partner countries

As a result, the majority of the respondents in UK, Greece and Spain agree with the statement "It is easier for pupils with autism to focus on (or shift their eye gaze to) objects rather than people", while, on the contrary, the majority of the respondents in Israel disagree.

In the statement "Pupils with autism can easily change their focus of attention" (see Figure 27), 16.7% of the UK (total valid answers, n = 209) respondents (n = 35) responded that they agree, 70.3% (n = 147) disagree and 12.9% (n = 27) are not sure. In Greece (total valid answers, n = 201), 47.3% (n = 95) agree, 43.3% (n = 87) disagree and 9.5% (n = 19) are not sure. In Spain (total valid answers, n = 108), 31.5% (n = 34) agree, 55.6% (n = 60) disagree and 13% (n = 14) are not sure.

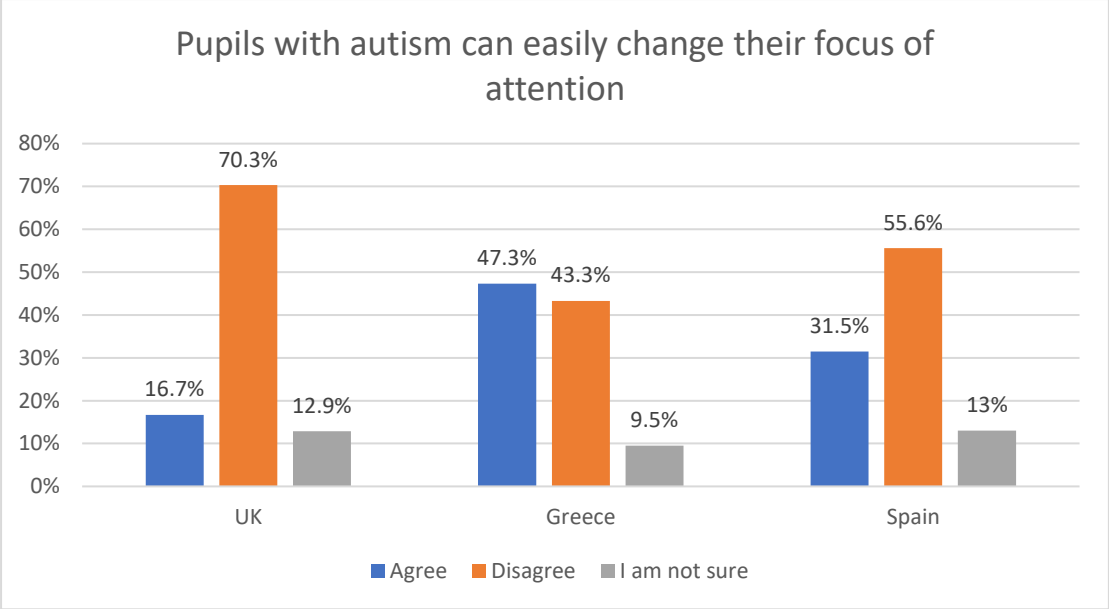


Figure 27. Pupils with autism can easily change their focus of attention, for the UK, Greece and Spain

Therefore, the majority of the respondents in UK and Spain disagree with the aforementioned statement, while the majority of the Greek respondents believe that pupils with autism can easily change their focus of attention.

In the statement "Some pupils with autism have also Attention -Deficit /Hyperactivity Disorder (ADHD)" (see Figure 28), the majority (89.9%) of the UK (total valid answers, n = 207) respondents (n = 186) responded that agree, 2.9% (n = 6) disagree and 7.2% (n = 15) are not sure. Similarly, in Greece (total valid answers, n = 201), 79.1% (n = 159) agree, 8% (n = 16) disagree and 12.9% (n = 26) are not sure. In Spain (total valid answers, n = 106), 60.4% (n = 64) agree, 15.1% (n = 16) disagree and 24.5% (n = 26) are not sure.

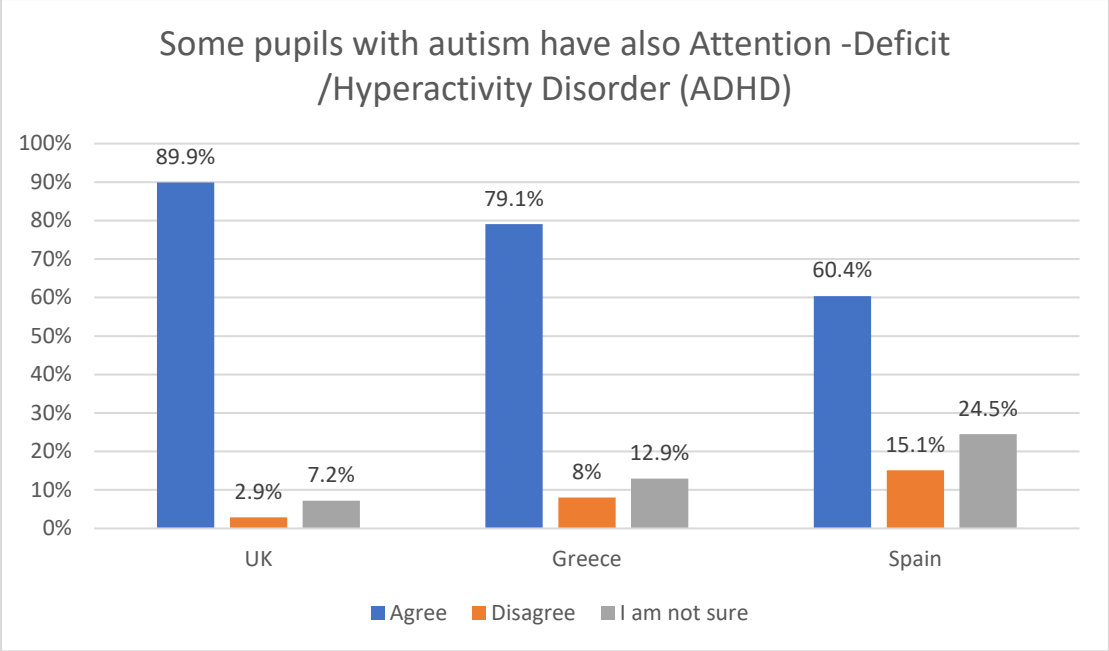


Figure 28. Some pupils with autism have also Attention -Deficit /Hyperactivity Disorder (ADHD), for the UK, Greece and Spain

Consequently, the majority of the respondents in UK, Greece and Spain believe that some pupils with autism have also Attention -Deficit /Hyperactivity Disorder (ADHD).

In the statement "Pupils with autism can be very focused on items or topics of personal interest" (see Figure 29), almost all (99%) of the UK (total valid answers, n = 209) respondents (n = 207) responded that agree, 0.5% (n = 1) disagree and 0.5% (n = 1) is not sure. In Greece (total valid answers, n = 201), 82.1% (n = 165) agree, 11.4% (n = 23) disagree and 6.5% (n = 13) are not sure. In Spain (total valid answers, n = 109), again a very high percentage (89%) of the respondents (n = 97) agree, 8.3% (n = 9) disagree and 2.8% (n = 3) are not sure.

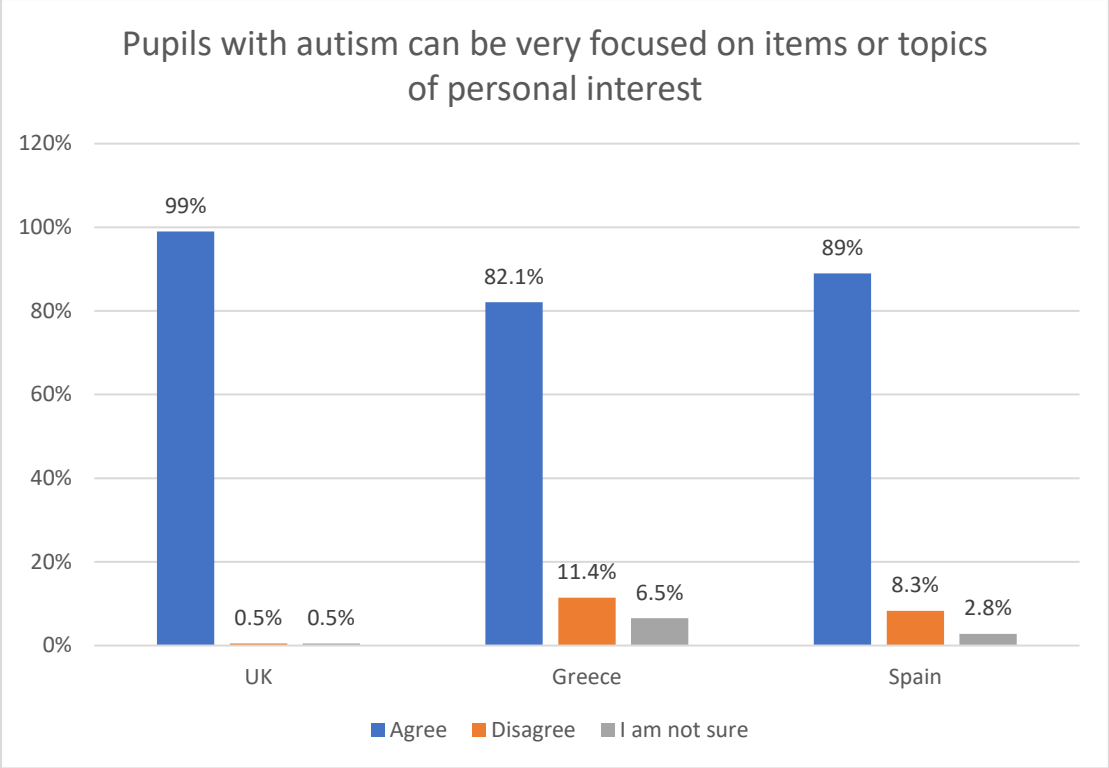


Figure 29. Pupils with autism can be very focused on items or topics of personal interest, for the UK, Greece and Spain

Therefore, the vast majority of the respondents in UK, Greece and Spain agree that pupils with autism can be very focused on items or topics of personal interest.

All in all, the majority of the respondents in all 4 countries agree with most of the statements. The statements that the respondents from the 4 countries disagree the most are: *Focus on something because another person is focusing on it*, and *Attention is the same in all pupils with autism*. Interestingly enough, the majority of the respondents in all 4 countries seem to dissociate joint attention from the core functions of attention. One explanation might be that the respondents believe that this behavior is mostly related to sociocommunicative skills rather than attention, due to its socio-emotional aspect. Nonetheless, disagreeing with the statement *Attention is the same in all pupils with autism* shows that respondents are aware of the individual differences of attention in autism, as it is for typically developing children.

SB Q5 The respondent is asked to read statements and state whether he/she agrees that attention is related to them. If they are unsure about a statement, they select "I am not sure"

Question (Q5) "Please read the following statements and state whether you agree attention is related to them" consisted of 7 forced choice 3-point Likert scale items ranging from agree, disagree to neutral. Results are presented in the following figures for all partner countries.

In the statement "Difficulties in following other people's eye gaze" (see Figure 30), 69.9% of the UK (total valid answers, n = 209) respondents (n = 146) responded that they agree, 18.7% (n = 39) disagree and 11.5% (n = 24) are not sure. In Greece (total valid answers, n = 201), 83.6% of the respondents (n = 168) agree, 10.4% (n = 21) disagree and 6% (n = 12) are not sure. In Israel (total valid answers, n = 145), 27.6% (n = 40) agree, 57.2% (n = 83) disagree and 15.2% (n = 22) are not sure. Finally, in Spain (total valid answers, n = 110), 68.2% (n = 75) agree, 24.5% (n = 27) disagree and 7.3% (n = 8) are not sure.

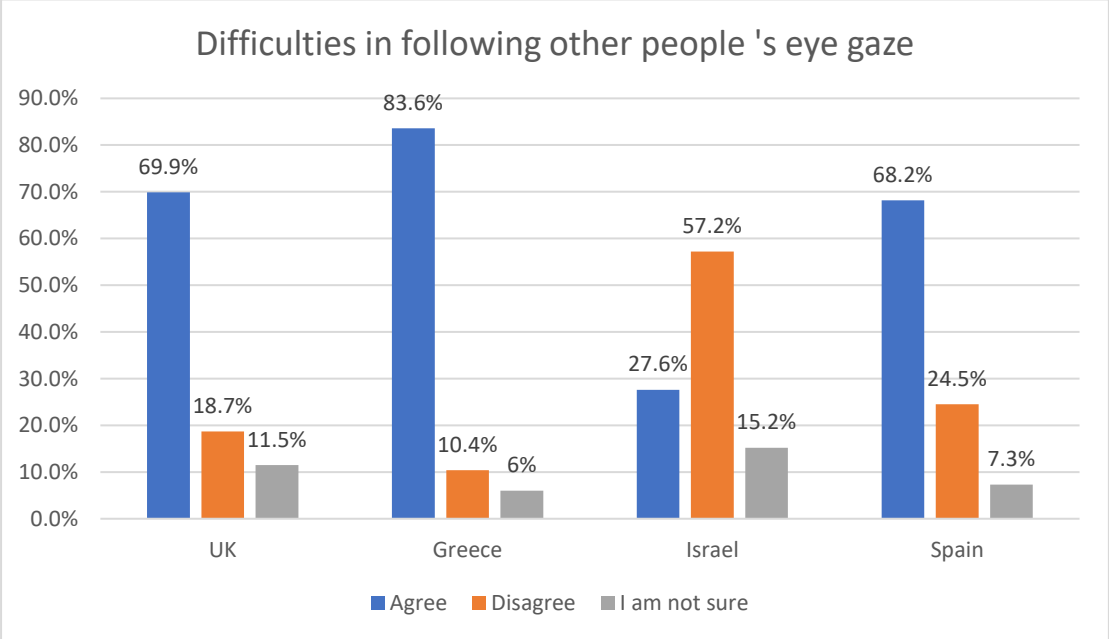


Figure 30. Difficulties in following other people's eye gaze, for all partner countries

Therefore, the majority of the respondents in UK, Greece and Spain agree with the aforementioned statement, while the majority of the Israeli respondents seem to believe that difficulties in following other people's eye gaze do not relate to attention in autism.

In the statement “Delay in language development” (see Figure 31), 62.2% of the UK (total valid answers, n = 209) respondents (n = 130) responded that they agree, 21.1% (n = 44) disagree and 16.7% (n = 35) are not sure. Almost half of the Greek (total valid answers, n = 201) respondents, (48.3%, n = 97) agree, 36.8% (n = 74) disagree and 14.9% (n = 30) are not sure. In Israel (total valid answers, n = 145), 24.8% (n = 36) agree, 53.8% (n = 78) disagree and 21.4% (n = 31) are not sure. Also, in Spain (total valid answers, n = 109), 60.6% (n = 66) agree, 28.4% (n = 31) disagree and 11% (n = 12) are not sure.

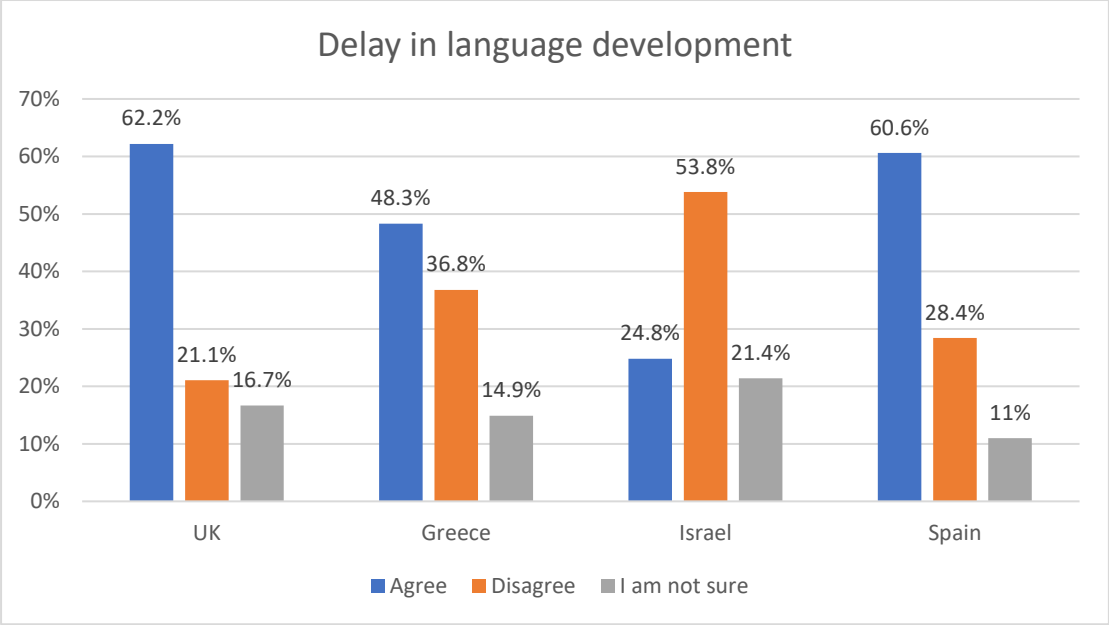


Figure 31. Delay in language development, for all partner countries

Again, the majority of the respondents in UK, Greece and Spain agree with the aforementioned statement, while the majority of the Israeli respondents seem to believe that delay in language development does not relate to attention in autism.

In the statement “Communication difficulties” (see Figure 32), 78.4% of the UK (total valid answers, n = 208) respondents (n = 163) responded that they agree, 15.9% (n = 33) disagree and 5.8% (n = 12) are not sure. Similarly, in Greece (total valid answers, n = 201), 76.6% (n = 154) agree, 16.4% (n = 33) disagree and 7% (n = 14) are not sure. In Israel (total valid answers, n = 145), 46.9% (n = 68) agree, 40.7% (n = 59) disagree and 12.4% (n = 18) are not sure, whereas in Spain (total valid answers, n = 108), 81.5% (n = 88) agree, 13.9% (n = 15) disagree and 4.6% (n = 5) are not sure.

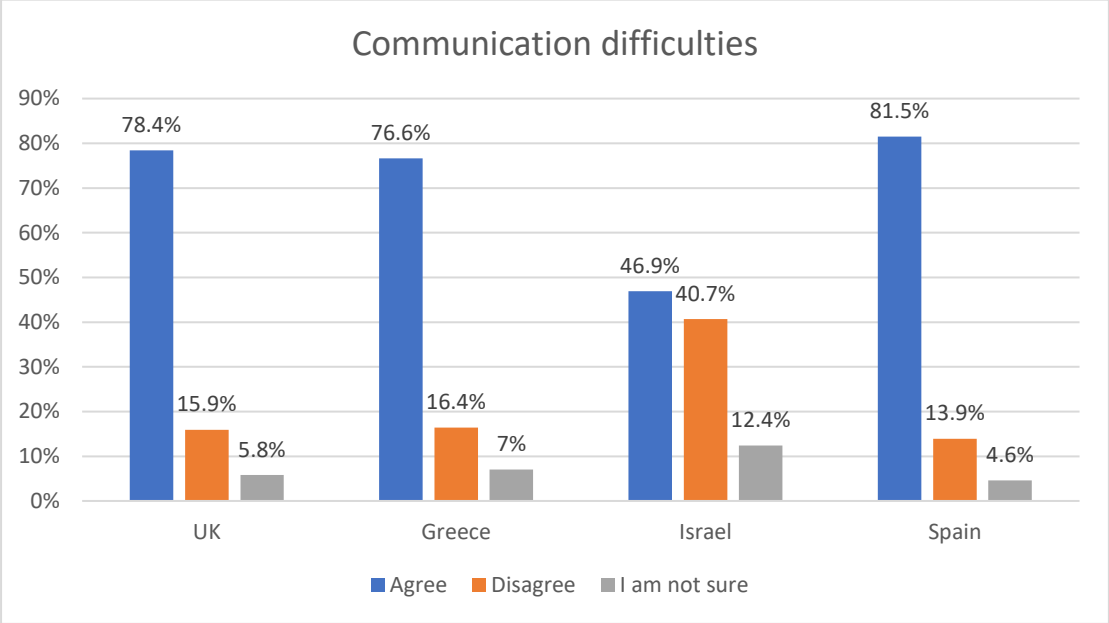


Figure 32. Communication difficulties, for all partner countries

Hence, the majority of the respondents in all 4 countries agree with the aforementioned statement and believe that attention relates to communication difficulties.

In the statement “Difficulties in social interaction” (see Figure 33), a high percentage (78.4%) of the UK (total valid answers, n = 208) respondents (n = 163) responded that they agree, 14.4% (n = 30) disagree and 7.2% (n = 15) are not sure. Likewise, in Greece (total valid answers, n = 208), 79% (n = 158) agree, 15.5% (n = 31) disagree and 5.5% (n = 11) are not sure. In Israel (total valid answers, n = 146), 58.6% (n = 85) agree, 29% (n = 42) disagree and 12.4% (n = 18) are not sure. Finally, in Spain (total valid answers, n = 109), 82.6% (n = 90) agree, 12.8% (n = 14) disagree and 4.6% (n = 5) are not sure.

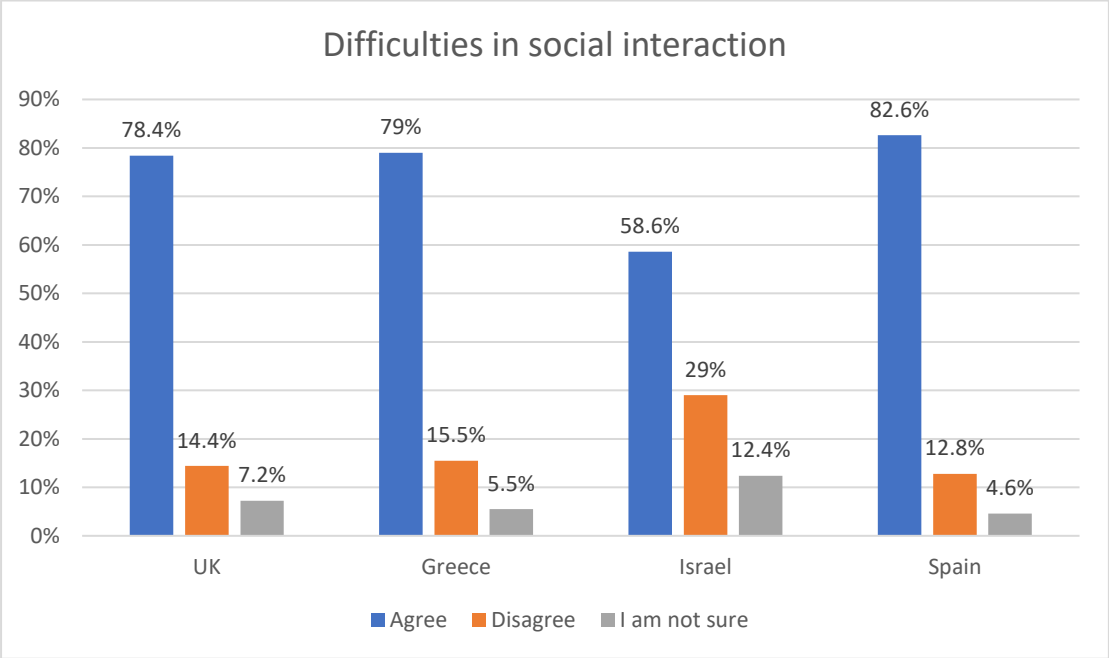


Figure 33. Difficulties in social interaction, for all partner countries

Again, the majority of the respondents in all 4 countries agree with the aforementioned statement and they associate difficulties in social interaction with attention.

In the statement “Restricted and repetitive behaviors and interests” (see Figure 34), 68.4% of the UK (total valid answers, n = 208) respondents (n = 143) responded that they agree, 20.6% (n = 43) disagree and 11% (n = 23) are not sure. In Greece (total valid answers, n = 201), a similar almost percentage of 63.2% (n = 127) agree, 26.4% (n = 53) disagree and 10.4% (n = 21) are not sure. As for Israel, 33.1% (n = 48) agree, 55.2% (n = 80) disagree and 11.7% (n = 17) are not sure. In Spain (total valid answers, n = 109), 73.4% (n = 80) agree, 18.3% (n = 20) disagree and 8.3% (n = 9) are not sure.

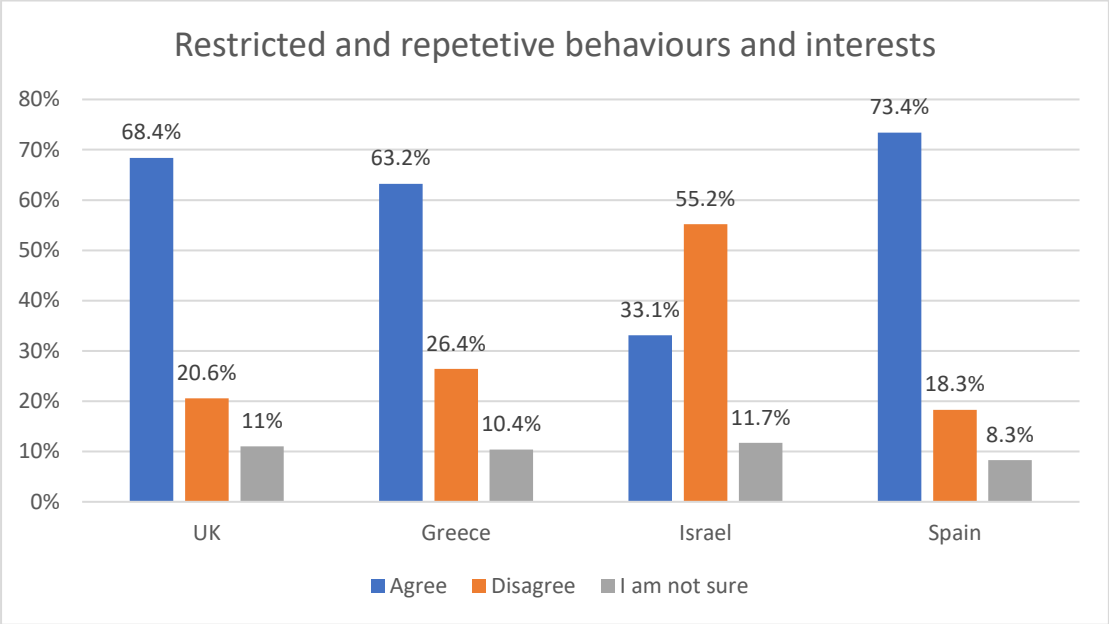


Figure 34. Restricted and repetitive behaviors and interests, for all partner countries

As for the statement “Restricted and repetitive behaviors and interests”, respondents from all 4 partner countries agreed with, apart from the Israeli ones that disagreed.

In the statement “Difficulties in reading and writing skills” (see Figure 35), half of the UK (total valid answers, n = 209) respondents (50.2%, n = 105) responded that they agree, 31.1% (n = 65) disagree and 18.7% (n = 39) are not sure. As for Greece (total valid answers, n = 200), 72% (n = 144) agree, 17% (n = 34) disagree and 11% (n = 22) are not sure. In Israel (total valid answers, n = 145), 52.4% (n = 76) agree, 27.6% (n = 40) disagree and 20% (n = 29) are not sure. In Spain (total valid answers, n = 109), similar to the percentage of Greece, 73.4% (n = 80) agree, 12.8% (n = 14) disagree and 13.8% (n = 15) are not sure.

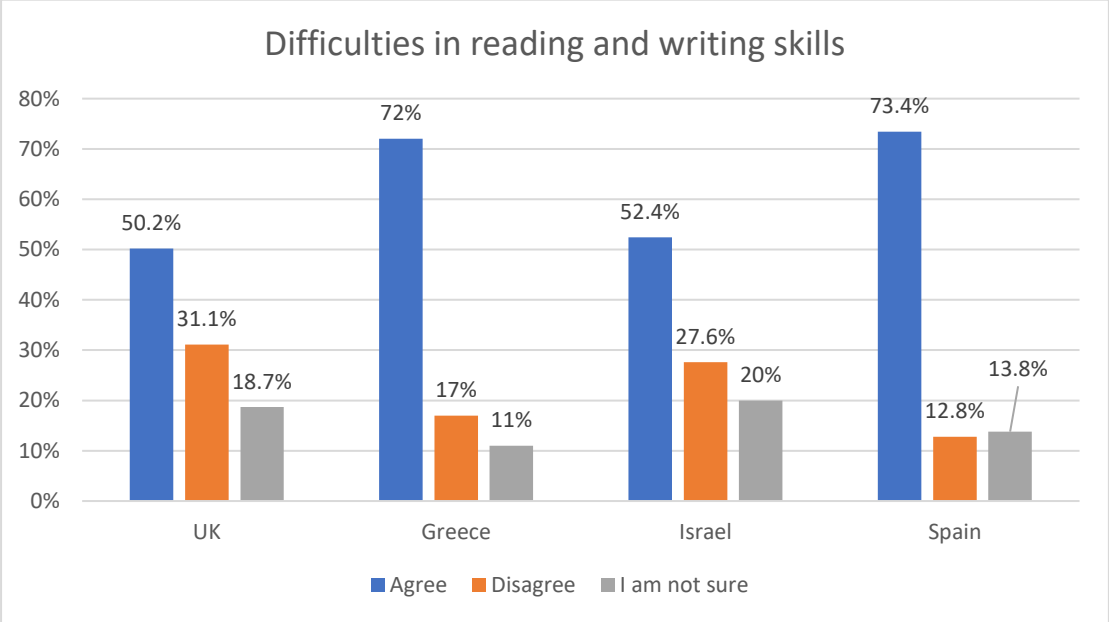


Figure 35. Difficulties in reading and writing skills, for all partner countries

In the statement “Difficulties in mathematics” (see Figure 36), 42.1% of the UK (total valid answers, n = 209) respondents (n = 88) responded that they agree, 37.8% (n = 79) disagree and 20.1% (n = 42) are not sure. In Greece (total valid answers, n = 197), 65% (n = 128) agree, 17.8% (n = 35) disagree and 17.3% (n = 34) are not sure. As for Israel (total valid answers, n = 145), 42.1% (n = 61) agree, 33.1% (n = 48) disagree and 24.8% (n = 36) are not sure. Finally, 54.6% of the Spanish (total valid answers, n = 108) respondents (n = 59) agree, 27.8% (n = 30) disagree and 17.6% (n = 19) are not sure.

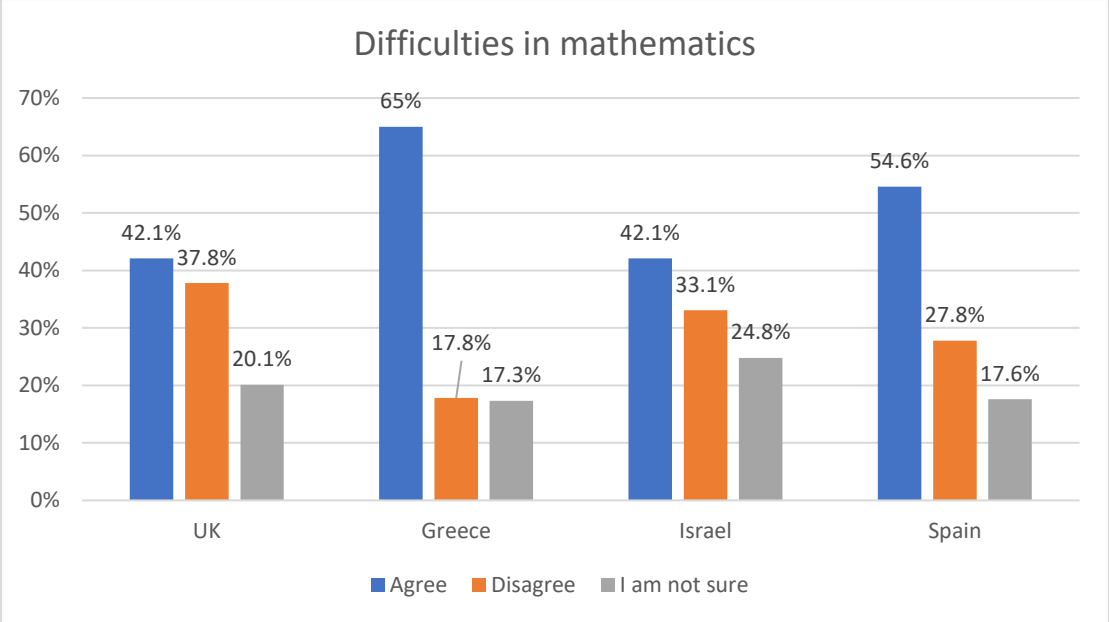


Figure 36. Difficulties in mathematics skills, for all partner countries

The respondents' answers in all partner countries coincide for the following statements: *Communication difficulties, Difficulties in social interaction, Difficulties in reading and writing skills, Difficulties in mathematics skills.* More specifically, respondents in all partner countries agree with all the above statements. On the other hand, the Israeli respondents seem to disagree on the statements that *Difficulties in following other people's eye gaze, Delay in language development and Restricted and repetitive behaviors and interests are* related to attention in autism. Interestingly, the highest percentage in all partner countries for the 'I am not sure' option was regarding the statements *Delay in language development* and *Difficulties in mathematics*.

SB Q6 The respondent is asked to read attention assessment methods and rate the frequency that he/she applies them with children with autism in his/her educational setting

In the question (Q6) "Please read the following attention assessment methods and rate the frequency you apply them with children with autism in your educational setting", respondents had to indicate on a scale of 1 (= never) to 5 (= always) the frequency that they apply 6 methods to assess attention in children with autism in their educational setting. Furthermore, in order to compare respondents' frequency of attention assessment methods among all partner countries we employed the median as 'measure of central tendency', which is included in the figures below.

In the statement “Observe the pupils’ behavior and keep free notes” (see Figure 37), 2.9% (n = 6) of the UK respondents (total valid answers, n = 208) stated that they never use this method, 5.8% (n = 12) use it rarely, 28.8% (n = 60) use it sometimes, 43.3% (n = 90) often, 19.2% (n = 40) always. In Greece (total valid answers, n = 201), 1% (n = 2) of the respondents stated that they never use this method, 7.5% (n = 15) use it rarely, 18.4% (n = 37) use it sometimes, 44.8% (n = 90) often and 28.4% (n = 57) always. As for Israel (total valid answers, n = 143), 0.7% (n = 1) of the respondents stated that they never use this method, 7.7% (n = 11) use it rarely, 30.1% (n = 43) use it sometimes, 32.9% (n = 47) often and 28.7% (n = 41) always. In Spain (total valid answers, n = 109), 2.8% (n = 3) of the respondents stated that they never use this method, 9.2% (n = 10) use it rarely, 22.9% (n = 25) sometimes, 37.6% (n = 41) often and 27.5% (n = 30) always.

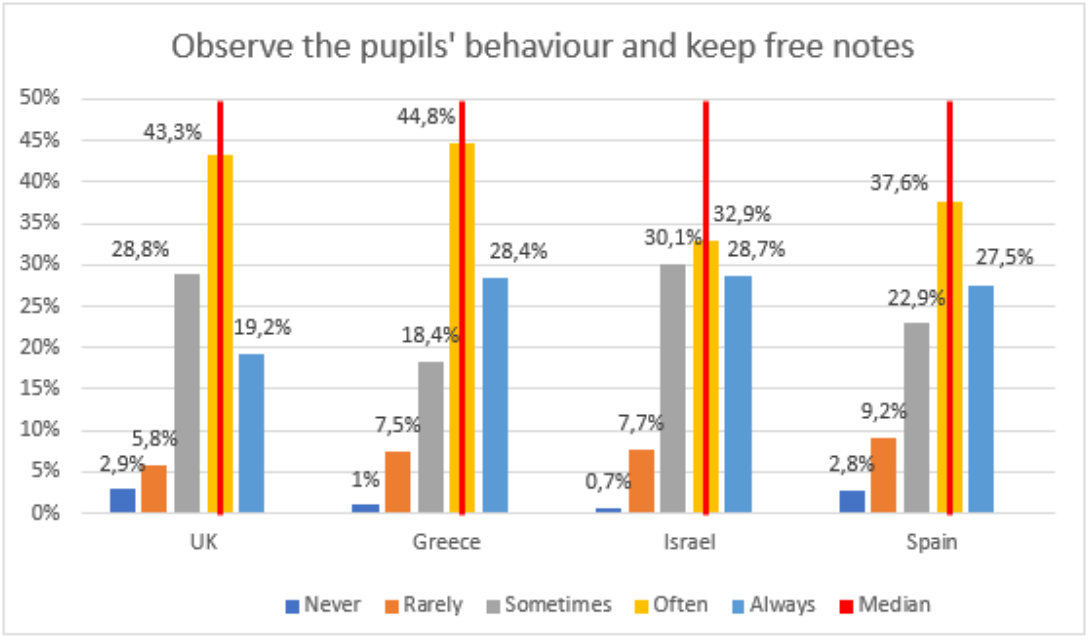


Figure 37. Observe the pupils’ behavior and keep free notes, for all partner countries

In the statement “Observe the pupils’ behavior using a specific checklist (e.g., a behavioral checklist)” (see Figure 38), 11.1% (n = 23) of the UK respondents (total valid answers, n = 208) stated that they never use this method, 13.9% (n = 29) use it rarely, 45.7% (n = 95) use it sometimes, 23.6% (n = 49) often and 5.8% (n = 12) always. In Greece (total valid answers, n = 199), 9% (n = 18) of the respondents stated that they never use this method, 20.1% (n = 40) use it rarely, 21.1% (n = 42) use it sometimes, 39.2% (n = 78) often and 10.6% (n = 21) always. In Israel (total valid answers, n = 138), 15.2% (n = 21) of the respondents stated that they never use this method, 30.4% (n = 42) use it rarely, 28.3% (n = 39) use it sometimes, 17.4% (n = 24) often, 8.7% (n = 12) always. As for Spain (total valid answers, n = 109), 4.6% (n = 5) of the respondents stated that they never use this method, 16.5% (n = 18) use it rarely, 36.7% (n = 40) sometimes, 31.2% (n = 34) often and 11% (n = 12) always.

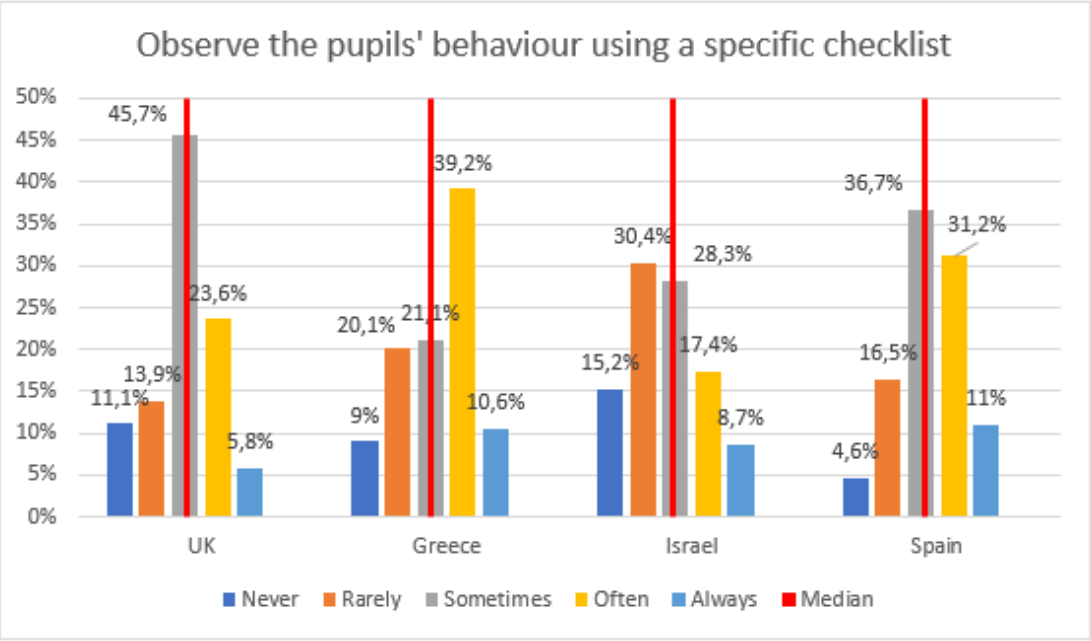


Figure 38. Observe the pupils’ behavior using a specific checklist (e.g., a behavioral checklist), for all partner countries

In the statement “Score the correct and incorrect responses during a learning task” (see Figure 39), 19.1% (n = 40) of the UK respondents (total valid answers, n = 207), stated that they never use this method, 30% (n = 62) use it rarely, 30% (n = 62) sometimes, 16.4% (n = 34) often and 4.3% (n = 9) always use it. In Greece (total valid answers, n = 199), 12.6% (n = 25) of the respondents stated that they never use this method, 14.6% (n = 29) use it rarely, 26.1% (n = 52) use it sometimes, 32.2% (n = 64) often and 14.6% (n = 29) always. In Israel (total valid answers, n = 138), 18.1% (n = 25) of the respondents stated that they never use this method, 15.9% (n = 22) use it rarely, 22.5% (n = 31) use it sometimes, 26.8% (n = 37) often and 16.7% (n = 23) always. As for Spain (total valid answers, n = 106), 10.4% (n = 11) of the respondents stated that they never use this method, 28.3% (n = 30) use it rarely, 34.9% (n = 37) sometimes, 22.6% (n = 24) often and 3.8% (n = 4) always.

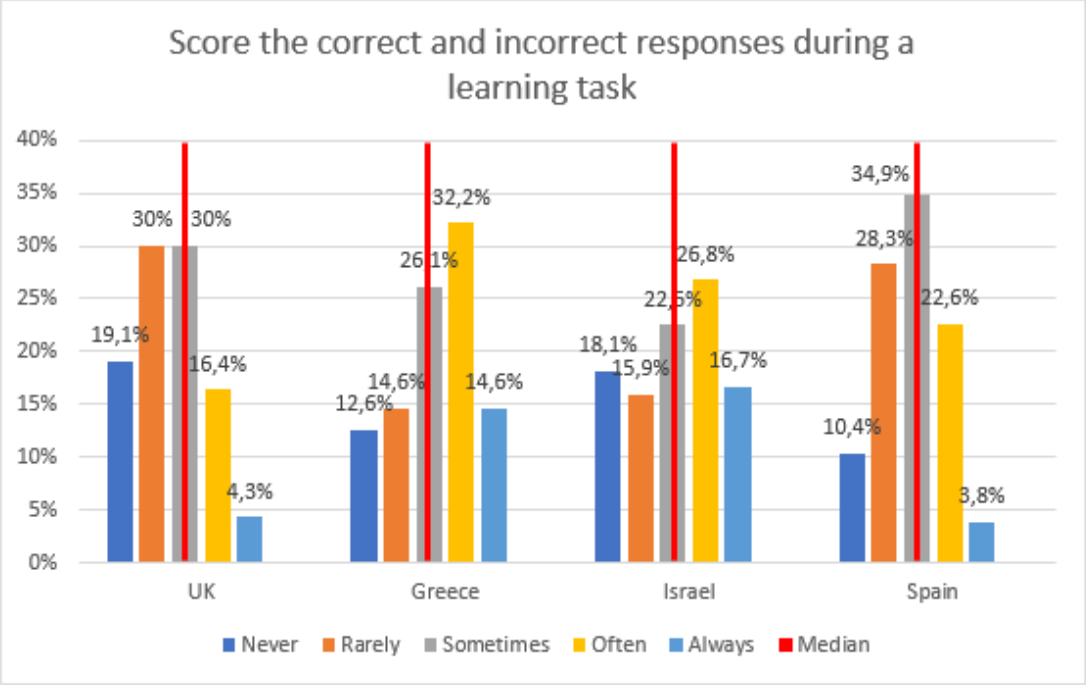


Figure 39. Score the correct and incorrect responses during a learning task, for all partner countries

In the statement “Record how long a pupil stays focused on a given task” (see Figure 40), in the UK (total valid answers, n = 208), 6.7% (n = 14) of the respondents stated that they never use this method, 15.4% (n = 32) use it rarely, 46.2% (n = 96) use it sometimes, 22.1% (n = 46) often and 9.6% (n = 20) always. 11% (n = 22) of the Greek respondents (total valid answers, n = 200) stated that they never use this method, 19% (n = 38) use it rarely, 23% (n = 46) use it sometimes, 36% (n = 72) often and 11% (n = 22) always. In Israel (total valid answers, n = 140), 12.1% (n = 17) of the respondents stated that they never use this method, 18.6% (n = 26) rarely use it, 29.3% (n = 41) sometimes, 25% (n = 35) often and 15% (n = 21) always. Finally, in Spain (total valid answers, n = 108), 11.1% (n = 12) of the respondents stated that they never use this method, 14.8% (n = 16) rarely use it, 40.7% (n = 44) sometimes, 25.9% (n = 28) often and 7.4% (n = 8) always.

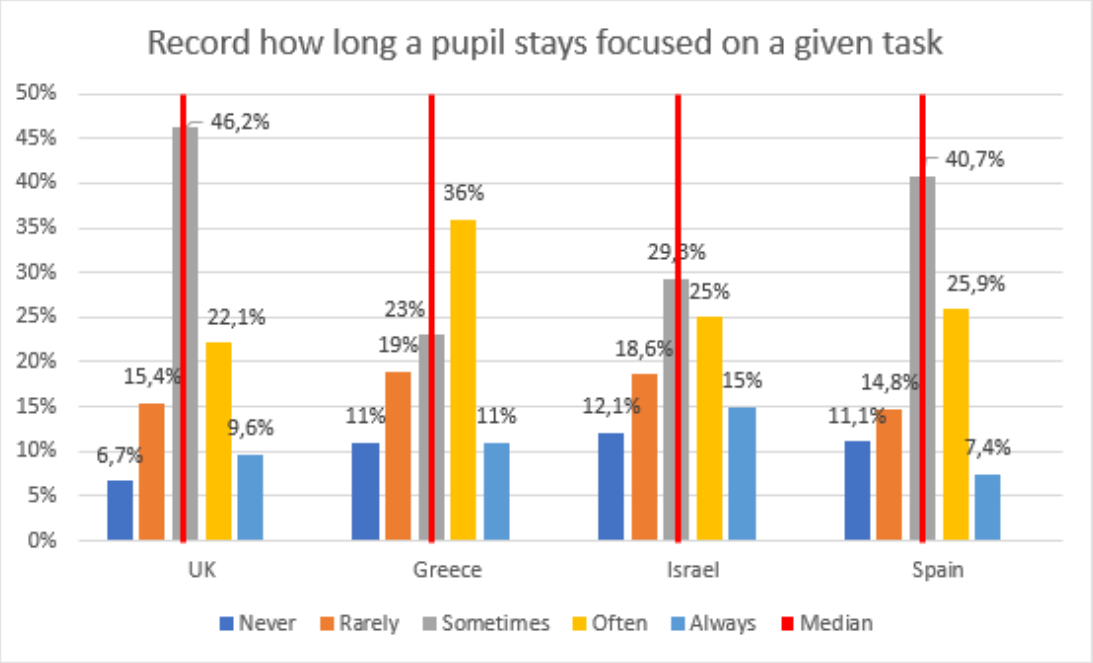


Figure 40. Record how long a pupil stays focused on a given task, for all partner countries

In the statement “Record the time it takes a pupil to successfully complete an academic task” (see Figure 41), in the UK (total valid answers, n = 207), 16.9% (n = 35) of the respondents stated that they never use this method, 27.1% (n = 56) rarely use it, 36.2% (n = 75) sometimes, 17.4% (n = 36) often and 2.4% (n = 5) always. In Greece (total valid answers, n = 199), 4% (n = 8) of the respondents stated that they never use this method, 11.6% (n = 23) rarely use it, 30.7% (n = 61) sometimes, 40.7% (n = 81) often and 13.1% (n = 26) always. In Israel (total valid answers, n = 137), 10.9% (n = 15) of the respondents stated that they never use this method, 19.7% (n = 27) rarely use it, 27% (n = 37) sometimes, 29.2% (n = 40) often and 13.1% (n = 18) always. As for Spain (total valid answers, n = 106), 14.2% (n = 15) of the respondents stated that they never use this method, 31.1% (n = 33) rarely use it, 31.1% (n = 33) use it sometimes, 19.8% (n = 21) often and 3.8% (n = 4) always.

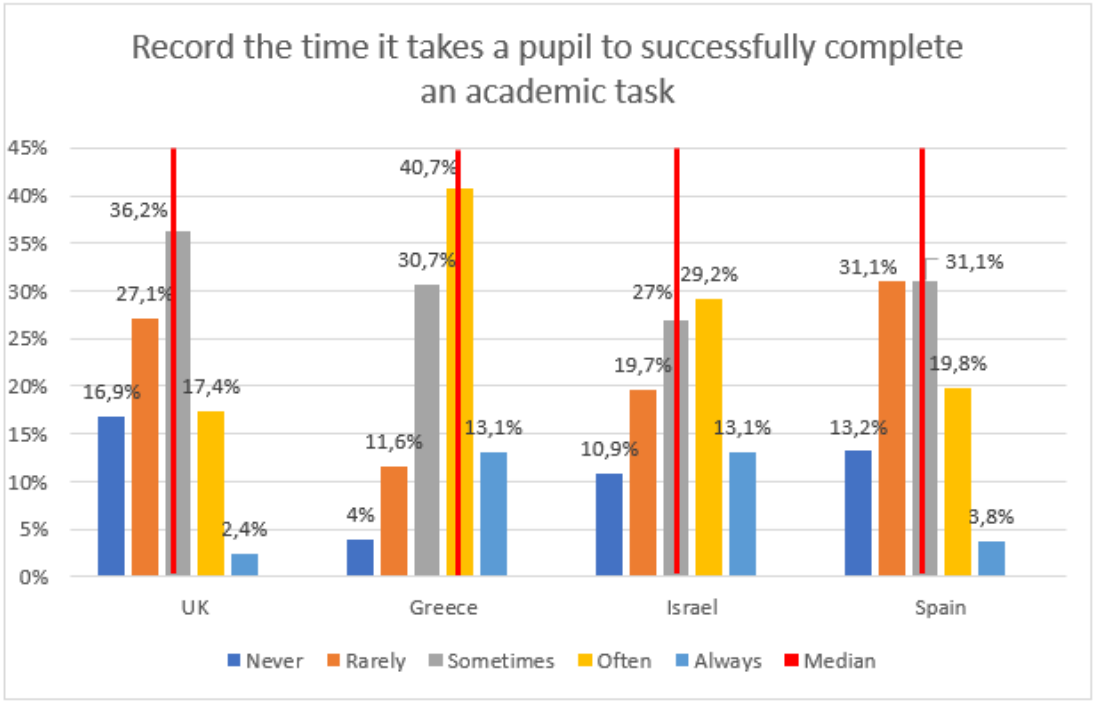


Figure 41. Record the time it takes a pupil to successfully complete an academic task, for all partner countries

In the statement “Discuss the pupils' behaviors with other colleagues or parents” (see Figure 42), in the UK (total valid answers, n = 207), one of the respondents (0.5%) stated that he /she never uses this method, 1% (n = 2) rarely use it, 13.5% (n = 28) sometimes, 37.7% (n = 78) often, and 47.3% (n = 98) always. Similarly, in Greece (total valid answers, n = 201), one of the respondents (0.5%) stated that he /she never uses this method, 1.5% (n = 3) rarely use it, 9% (n = 18) sometimes, 36.8% (n = 74) often, 52.2% (n = 105) always. In Israel (total valid answers, n = 139), 2.2% (n = 3) of the respondents stated that they rarely use this method, 14.4% (n = 20) sometimes, 35.3% (n = 49) often and 48.2% (n = 67) always. Finally, in Spain (total valid answers, n = 108), again one of the respondents (0.9%) stated that he /she never uses this method, 2.8% (n = 3) rarely use it, 14.8% (n = 16) sometimes, 44.4% (n = 48) often, 37% (n = 40) always.

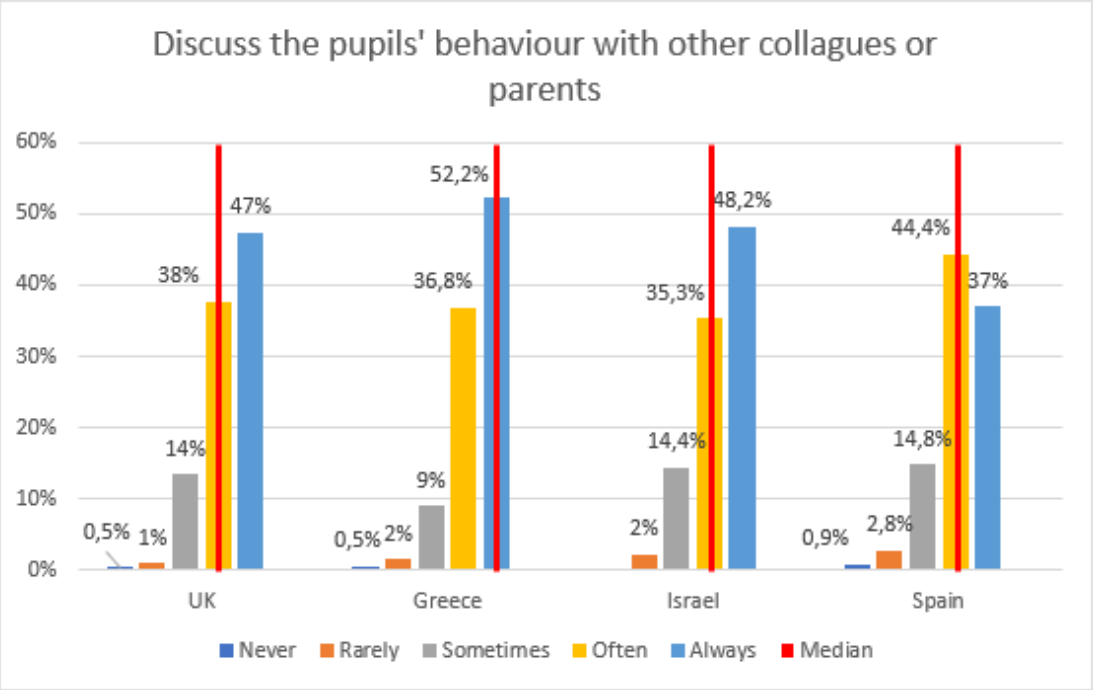


Figure 42. Discuss the pupils' behaviors with other colleagues or parents, for all partner countries

Furthermore, respondents were given the choice to provide additional assessment methods. Their answers can be found in Appendix II, Additional attention assessment methods for the UK, Greece, Israel and Spain.

Therefore, the majority of the respondents in all partner countries often observe the pupils’ behavior and keep free notes as an attention assessment method. Additionally,

the respondents in the UK, Israel and Spain answered that they often discuss the pupils' behaviors with other colleagues or parents while Greek respondents always do so.

SB Q7 The respondent is asked to read attention activities and rate the frequency that he/she applies them with children with autism in his/her educational setting

In the question (Q7) “Read the following attention activities and rate the frequency you apply them with children with autism in your educational setting” respondents had to indicate on a scale of 1 (= never) to 5 (= always) the frequency that they use 4 types of activities to train attention with children with autism in their educational setting.

In the statement “Activities in which the children are expected to select relevant information and suppress irrelevant information (e.g., listen to the teacher while blocking out the noise of other children working independently)” (see Figure 43), 5.9% (n = 12) of the UK respondents (total valid answers, n = 205), stated that they never use these activities, 16.1% (n = 33) rarely use them, 33.7% (n = 69) sometimes use them, 37.6% (n = 77) often and 6.8% (n = 14) always. In Greece (total valid answers, n = 198), 6.6% (n = 13) of the respondents stated that they never use these activities, 13.1% (n = 26) rarely use them, 38.9% (n = 77) sometimes use them, 37.9% (n = 75) often use them and 3.5% (n = 7) always. In Israel (total valid answers, n = 142), 3.5% (n = 5) of the respondents stated that they never use these activities, 4.9% (n = 7) rarely use them, 23.2% (n = 33) sometimes, 40.1% (n = 57) often and 28.2% (n = 40) always. As for Spain (total valid answers, n = 107), 11.2% (n = 12) of the respondents stated that they never use these activities, 17.8% (n = 19) rarely, 29.9% (n = 32) sometimes, 32.7% (n = 35) often and 8.4% (n = 9) always.

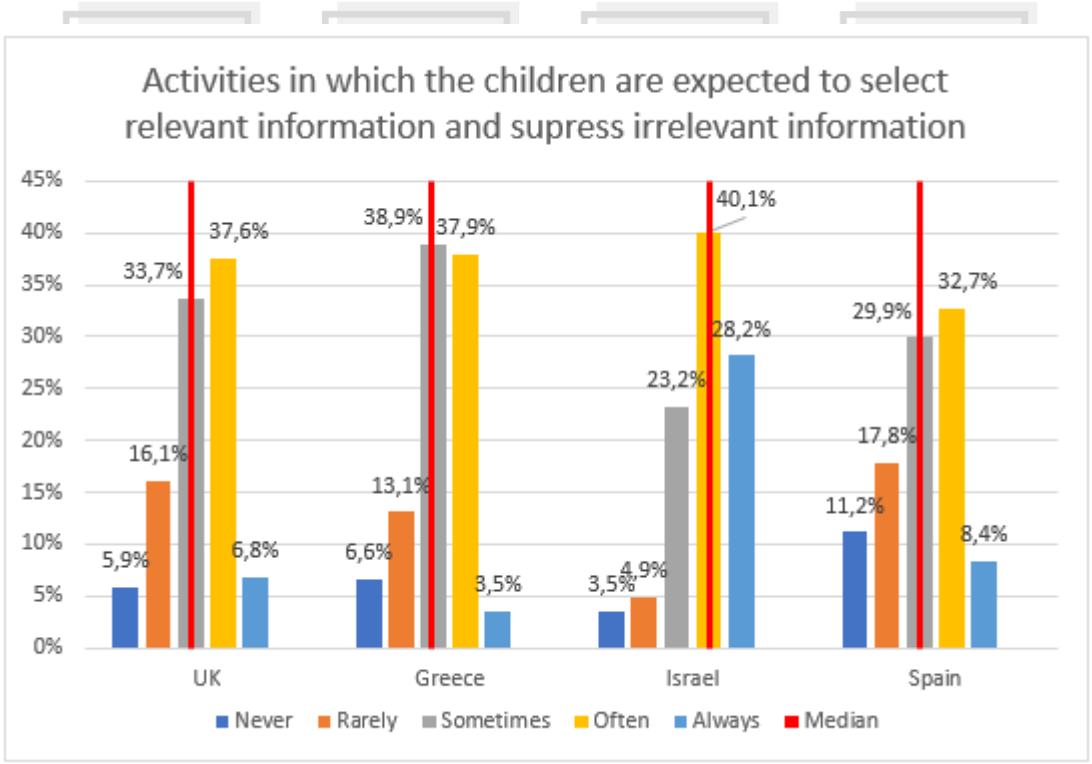


Figure 43. Activities in which the children are expected to select relevant information and suppress irrelevant information, for all partner countries

In the statement “Activities in which the children have to change attention from one area of focus and redirect it towards a different area (e.g., copy some text from the

board)" (see Figure 44), in the UK (total valid answers, n = 206), 9.2% (n = 19) of the respondents stated that they never use these activities, 25.7% (n = 53) rarely use them, 30.1% (n = 62) sometimes use it, 29.6% (n = 61) often and 5.3% (n = 11) always. In Greece (total valid answers, n = 201), 2% (n = 4) of the respondents stated that they never use these activities, 12.9% (n = 26) rarely, 26.9% (n = 54) sometimes, 52.7% (n = 106) often and 5.5% (n = 11) always. In Israel (total valid answers, n = 138), 5.8% (n = 8) of the respondents stated that they never use these activities, 7.2% (n = 10) rarely, 20.3% (n = 28) sometimes, 38.4% (n = 53) often, 28.3% (n = 39) always. For Spain (total valid answers, n = 106), 10.4% (n = 11) of the respondents stated that they never use these activities, 18.9% (n = 20) rarely, 34.9% (n = 37) sometimes, 31.1% (n = 33) often, 4.7% (n = 5) always.

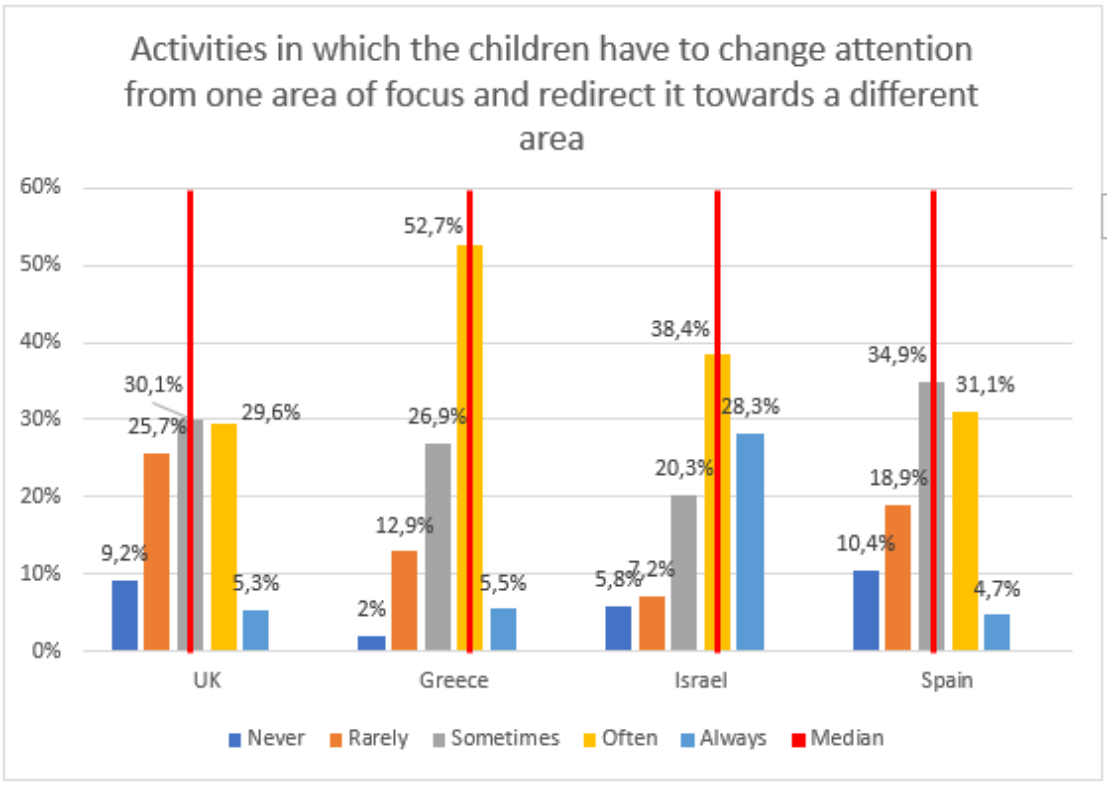


Figure 44. Activities in which the children have to change attention from one area of focus and redirect it towards a different area, for all partner countries

In the statement “Activities in which the children have to focus over a long period of time which is gradually increased (e.g., read a book, complete a writing task)” (see Figure 45), 6.3% (n = 13) of the UK respondents (total valid answers, n = 206), stated that they never use these activities, 16% (n = 33) rarely use them, 39.8% (n = 82) sometimes, 33% (n = 68) often, 4.9% (n = 10) always. In Greece (total valid answers, n = 200), 3.5% (n = 7) of the respondents stated that they never use these activities, 10% (n = 20) rarely, 30.5% (n = 61) sometimes, 48.5% (n = 97) often, 7.5% (n = 15) always. In Israel (total valid answers, n = 138), 5.8% (n = 8) of the respondents stated that they never use these activities, 10.9% (n = 15) rarely use them, 18.1% (n = 25) sometimes, 35.5% (n = 49) often and 29.7% (n = 41) always. As for Spain (total valid answers, n = 107), 7.5% (n = 8) of the respondents stated that they never use these activities, 17.8% (n = 19) rarely use them, 29% (n = 31) sometimes, 35.5% (n = 38) often and 10.3% (n = 11) always.

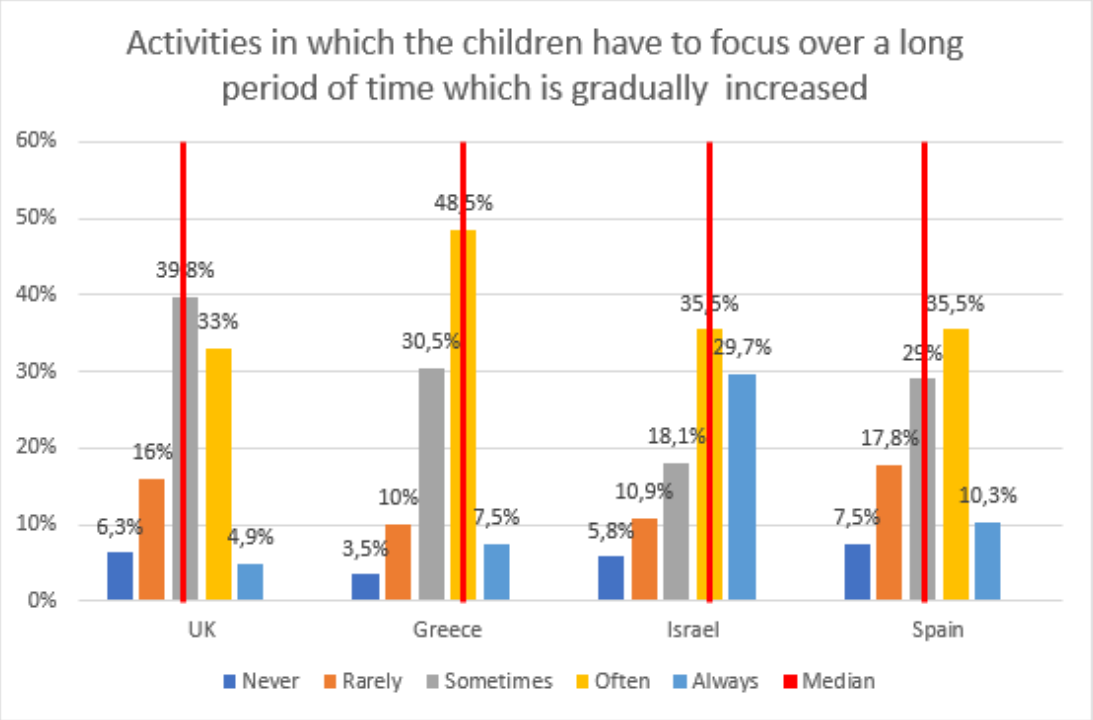


Figure 45. Activities in which the children have to focus over a long period of time which is gradually increased, for all partner countries

In the statement "Activities in which the children have to share interest for an object/toy with an adult or a peer (e.g., work in pairs with a peer to complete an experiment/practical project)" (see Figure 46), 2.9% (n = 6) of the UK respondents (total valid answers, n = 206) stated that they never use these activities, 10.2% (n = 21) rarely use them, 45.6% (n = 94) sometimes, 34% (n = 70) often and 7.3% (n = 15) always. In Greece (total valid answers, n = 202), 1.5% (n = 3) of the respondents stated that they never use these activities, 5.9% (n = 12) rarely use them, 29.7% (n = 60) sometimes, 51.5% (n = 104) often and 11.4% (n = 23) always. In Israel (total valid answers, n = 138), 4.3% (n = 6) of the respondents stated that they never use these activities, 7.2% (n = 10) rarely use them, 26.1% (n = 36) sometimes, 36.2% (n = 50) often and 26.1% (n = 36) always. As for Spain (total valid answers, n = 106), 2.8% (n = 3) of the respondents stated that they never use these activities, 7.5% (n = 8) rarely use them, 26.4% (n = 28) sometimes, 53.8% (n = 57) often and 9.4% (n = 10) always.

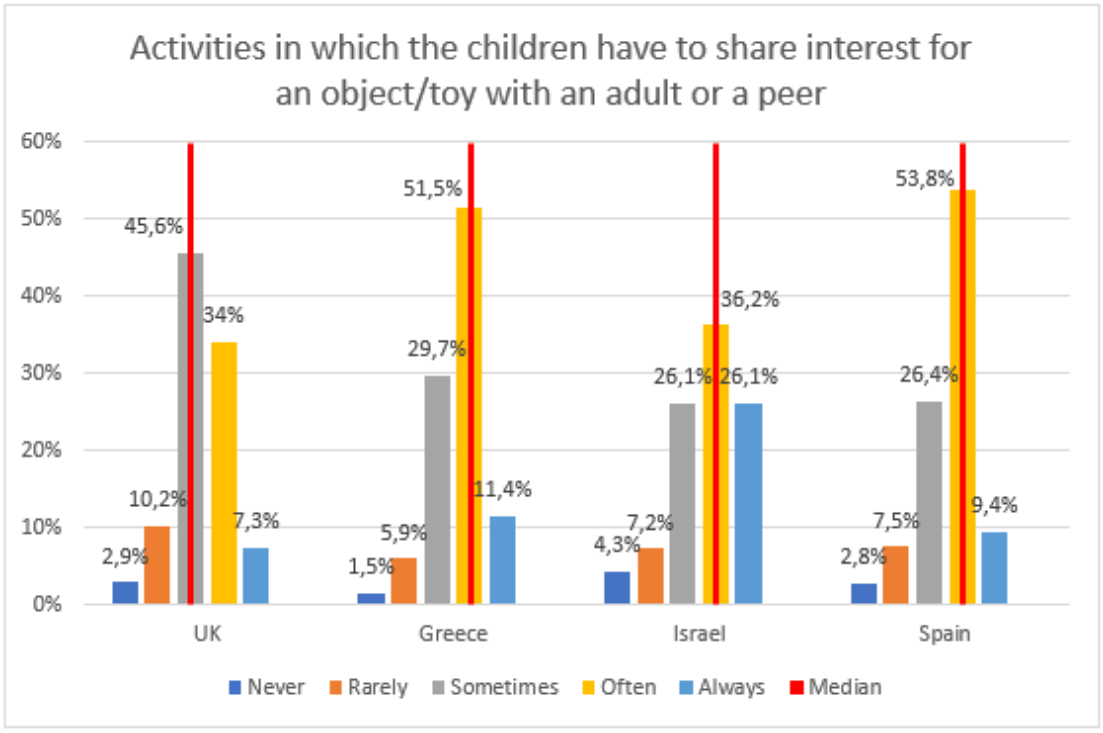


Figure 46. Activities in which the children have to share interest for an object/toy with an adult or a peer, for all partner countries

Teaching staff in the four countries reported that they use similar strategies to train attention in children with autism. Israeli respondents tend to use more *Activities in which the children are expected to select relevant information and suppress irrelevant*

information than the UK, Spanish and Greek respondents. *Activities in which the children have to change attention from one area of focus and redirect it towards a different area* and *Activities in which the children have to focus over a long period of time which is gradually increased* are mostly used by Greek and Israeli respondents, while *Activities in which the children have to share interest for an object/toy with an adult or a peer* are mostly used by Greek, Israeli and Spanish respondents.

SB Q8 The respondent is asked whether he/she uses software/apps for training attention as well as to specify them if any

In the question "Do you use software/apps for training attention?" respondents had to indicate whether they use or not software/apps for training attention. In the case of an affirmative answer, they had to specify the software/apps they use. In the UK, 89% (n = 186) of the respondents don't use software/apps for training attention, while 3.8% (n = 8) did not provide any answer. The remaining 7.2% (n = 15) mentioned that they use the software/apps which are presented in Table 13.

Table 13. Software/apps for training attention for the UK respondents

Software/apps	More details about suggestions
BKSB	https://www.bksb.co.uk
Clicker 7 - literacy software allows pupils to engage with own learning through use of IT, giving them confidence to work independently.	https://www.cricksoft.com/uk/clicker
Early years computer software such as 2Simple	https://2simple.com
Helpkidzlearn games	https://www.helpkidzlearn.com

In Greece, 79% (n = 186) of the respondents don't use software/apps for training attention, while 6.8% (n = 14) did not provide any answer. The remaining 14.1% (n = 29) mentioned the use of the software/apps which are presented in Table 14.

Table 14. Software/apps for training attention for Greek respondents

Software/apps	More details about suggestions
Kinems	https://www.kinems.com/
GCompris	https://gcompris.net/index-el.html
DayCape	https://www.daycape.com/
Jele	https://bestdealfor32.life
To magiko filtro	http://www.media.uoa.gr/epinoisi/tmf/tmf20.rar
Oi aktines	http://www.axd.gr/product_info.php?products_id=8449
O xefteris	http://www.siem.gr/shop.html
Oi peirates, for children with learning difficulties	https://www.intelearn.gr/index.php
Margarita, for bilingual children	http://www.ediamme.edc.uoc.gr
RamKid	https://ramkid.fandom.com/el/wiki/
Scratch	https://scratch.mit.edu/
Animaker	https://www.animaker.com/
Quizlet	https://quizlet.com/en-gb
Edpuzzle	https://edpuzzle.com/
Peris & Katia	https://ramkid.fandom.com/el/wiki
Letters	http://www.letterlearn.com/
Sky Burger	https://el.y8.com/games/sky_burger
Autism iHelp	https://play.google.com/store/apps

In Israel, 98% (n = 145) of the respondents don't use software/apps for training attention, while the remaining 2% (n = 3) mentioned the use of the software/apps which are presented the Table above (see Table 15).

Table 15. Software/apps for training attention for Israeli respondents

Software/apps	More details about suggestions
makeit	https://play.google.com/store/apps/
bisbort	
step by step	

In Spain, 54.9% (n = 62) of the respondents don't use software/apps for training attention, while 7.1% (n = 8) did not provide any answer. The remaining 38.1% (n = 43) indicated the use the software/apps which are presented in Table 16.

Table 16. Software/apps for training attention for Spanish respondents

Software/apps	More details about suggestions
Language and Cognitive Therapy for Children (MITA)	https://play.google.com/store/apps/details?id=com.imagiration.mita&hl=en_IN
ABC Autismo - Animais	https://play.google.com/store/apps/details?id=com.dokye.abcanimais&hl=el&gl=US
#Soyvisual	https://play.google.com/store/apps/details?id=com.soyvisual.player&hl=es_419&gl=US
Sigueme	https://play.google.com/store/apps/details?id=com.orange.sigueme&hl=el
AUTISMIND	https://play.google.com/store/apps/details?id=com.autismindd&hl=el&gl=US
e-Mintza	https://apps.apple.com/us/app/e-mintza/id738387685
EmoPLAY	https://play.google.com/store/apps/details?id=com.orange.emoplay&hl=en_US

Build a Toy 1	https://myfirstapp.com/application/build-a-toy-1/
The Grid 3 software	https://thinksmartbox.com/product/grid-3/
JClic	https://clic.xtec.cat/legacy/en/jclic/download.htm
GCompris	https://gcompris.net/index-el.html
José Aprende	https://play.google.com/store/apps/details?id=com.orange.joseaprende&hl=el
LetMeTalk: Free AAC Talker	https://play.google.com/store/apps/details?id=de.appnotize.letmetalk&hl=en
Otsimo	https://apps.apple.com/us/app/otsimo-educaci%C3%B3n-especial/id1084723774?l=es
Marbotic	https://www.marbotic.com/
TinyTap	https://www.tinytap.it/
Genially	https://www.genial.ly/
ARASAAC	http://aulaabierta.arasaac.org/software?id_software=1
NeuronUP	https://www.neuronup.com/es
The Mindfulness App	https://apps.apple.com/us/app/the-mindfulness-app/id417071430
SEN Switcher	https://www.ianbean.co.uk/senswitcher/
Helpkidzlearn games	https://www.helpkidzlearn.com
Smile and Learn	https://smileandlearn.com/?lang=en
Toca Boca	https://tocaboca.com/
Google Maps	https://www.google.com/maps

Thus, Israel is the country in which respondents reported almost no use of software/Apps to train attention and Spain is the country in which respondents use software/ Apps the most. However, in all 4 countries the majority of the respondents reported that they do not use software/Apps to train attention.

SB Q9 The respondent is asked about his/her confidence with regard to knowledge on attention difficulties in autism

In the question (Q9) "How confident do you feel about your knowledge on attention difficulties in autism?" respondents had to indicate, on a scale of 1 (= no confident at all) to 4 (= very confident), the level of their confidence with regard to their knowledge on attention difficulties in autism. More specifically, 48.8% (n = 101) of the UK respondents (total valid answers, n = 207) stated that they are quite confident, 32.9% (n = 68) a little confident, 13% (n = 27) very confident and 5.3% (n = 11) don't feel confident at all. In Greece (total valid answers, n = 202), 47% (n = 95) of the respondents stated that they are a little confident, 36.1% (n = 73) quite confident, 14.4% (n = 29) not confident at all and only 2.5% (n = 5) feel very confident. In Israel (total valid answers, n = 146), 47.9% (n = 70) of the respondents stated that they are a little confident, 28.8% (n = 42) quite confident, 21.2% (n = 31) not confident at all and 2.1% (n = 3) feel very confident. As for Spain (total valid answers, n = 109), 61.5% (n = 67) of the respondents stated that they are a little confident, 30.3% (n = 33) quite confident, 6.4% (n = 7) not confident at all and only 1.8% (n = 2) feel very confident (see Figure 47).

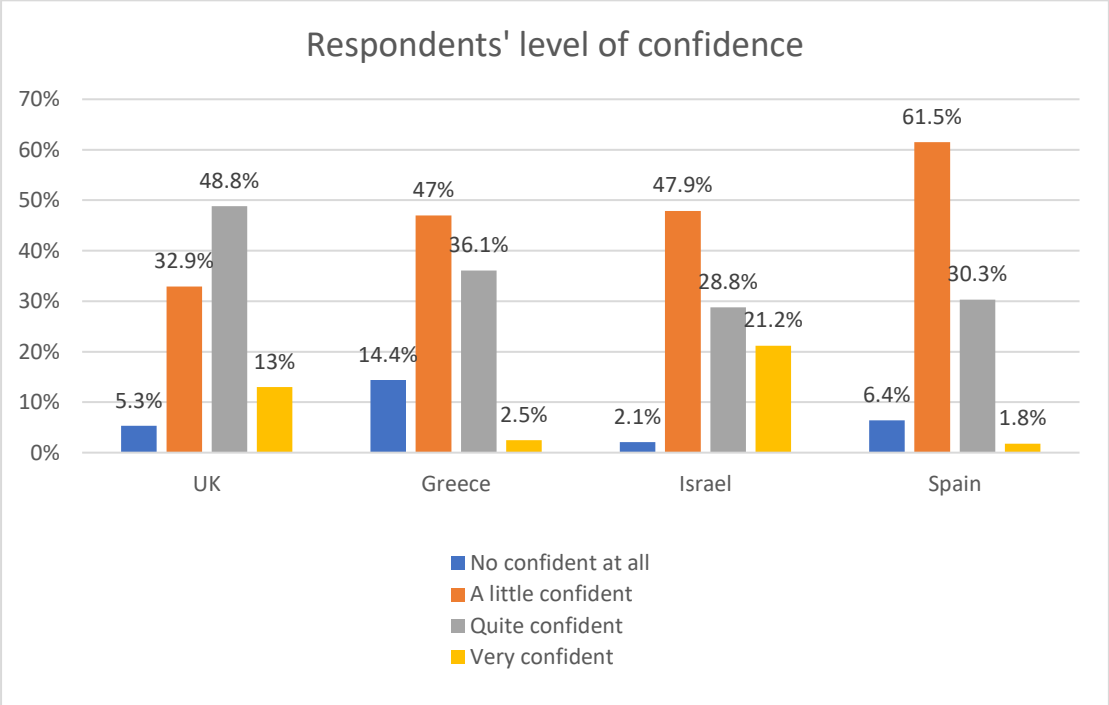


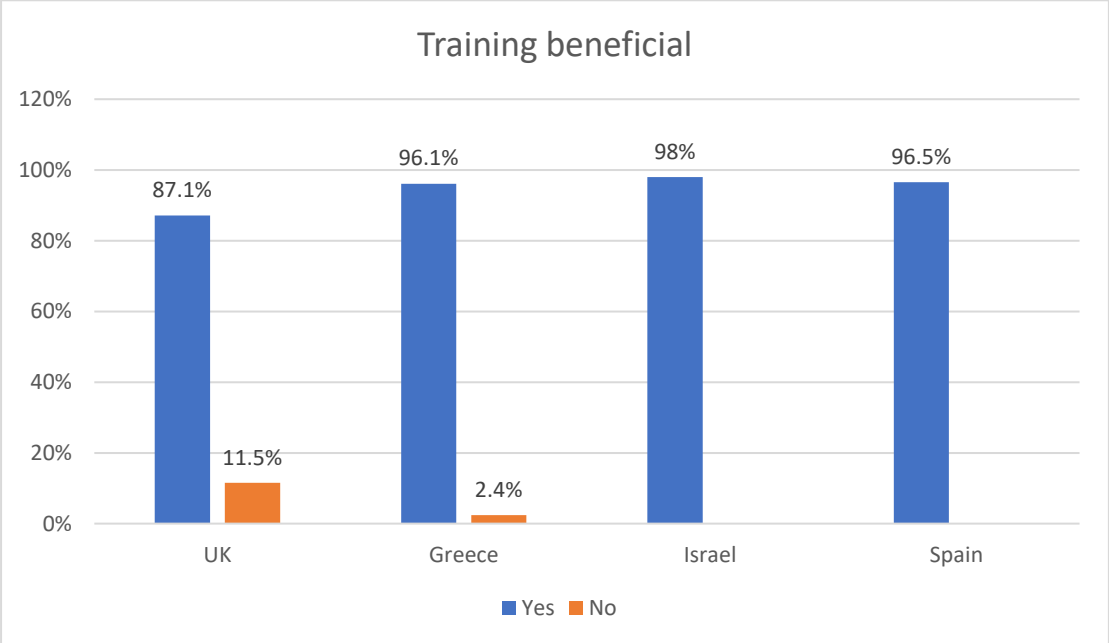
Figure 47. The level of confidence with regard to respondents' knowledge on attention difficulties in autism, for all partner countries

Hence, UK respondents seem more confident with regard to knowledge on attention difficulties in autism. With the exception of the UK, in the other 3 countries the majority of the respondents stated that they have little confidence.

SB Q10 The respondent is asked about his/her views on the benefits of training to improve understanding of attention in autism

In the question (Q10) "Do you think that training to improve your understanding of attention in autism would be beneficial for you?" respondents had to indicate whether they think that training would be beneficial for them with regard to improving their understanding of attention in autism. The majority of the respondents answered positively in all partner countries, namely, 87.1% (n = 182) of the UK respondents, 96.1% (n = 197) of the Greek respondents, 98% of the respondents (n = 145) from Israel and 96.5% of the Spanish respondents (n = 109).

Respondents from the UK feel in less need of training in attention which confirms the previous finding that teaching staff from the UK feel the more confident about their knowledge in training attention skills in children with autism.



SB Q11 The respondent is asked about his/her preference regarding the mode/type of training

Next, respondents were asked to indicate the mode/type of training they would prefer to receive, in the question (Q11) "If you think that training to improve your understanding of attention in autism would be beneficial for you, please indicate the mode/type of training you would prefer to receive". Respondents could select more than one answer. With regards to the mode/type of training per partner country, in the UK (see Table 17) 11% (n = 23) did not provide an answer, 29.6% of the respondents (n = 136) prefer combination of theory and practice, 24.2% (n = 111) prefer online training, 22.7% (n = 104) would like coaching in their setting, 18.3% (n = 84) prefer face-to-face training, 4.8% (n = 22) theoretical training and 0.2% (n = 1) training was identified as "other" (see Appendix II, Mode/type of training "other", UK).

Table 17. Preferred mode/type of training for the UK respondents

		N	Percent
Preferred mode/type of training	Combination of theory and practice	136	29.6%
	OnLine training	111	24.2%
	Coaching in your setting	104	22.7%
	Face-to-face training	84	18.3%
	Theoretical training	22	4.8%
	Other	1	0.2%

In Greece (see Table 18), 4.9% (n = 10) did not provide an answer, 40.1% of the respondents (n = 146) prefer combination of theory and practice, 27.2% (n = 99) prefer coaching in their setting, 17.3% (n = 63) face-to-face training, 11.3% (n = 41) online training, 3.3% (n = 12) theoretical training and 0.8% (n = 3) training was identified as "other" (see Appendix II, Mode/type of training "other", Greece).

Table 18. Preferred mode/type of training for Greek respondents

		N	Percent
Preferred mode/type of training	Combination of theory and practice	146	40.1%
	Coaching in your setting	99	27.2%
	Face-to-face training	63	17.3%
	Online training	41	11.3%
	Theoretical training	12	3.3%
	Other	3	0.8%

Regarding Israel (see Table 19), 5.4% (n = 8) did not provide an answer, 41.6% of the respondents (n = 64) prefer combination of theory and practice, 24.7% (n = 32) prefer coaching in their setting, 12.3% (n = 19) would like face-to-face training, 12.3% (n = 19) online training and 9.1% (n = 14) theoretical training.

Table 19. Preferred mode/type of training for Israeli respondents

		N	Percent
Preferred mode/type of training	Combination of theory and practice	64	41.6%
	Coaching in your setting	32	24.7%
	Face-to-face training	19	12.3%
	OnLine training	19	12.3%
	Theoretical training	14	9.1%

As for Spain (see Table 20), 2.7% (n = 3) did not provide an answer, 32.9% of the respondents (n = 77) prefer combination of theory and practice, 28.2% (n = 66) prefer online training, 20.9% (n = 49) face-to-face training, 15.8% (n = 37) prefer coaching in their setting, 1.7% (n = 4) theoretical training and 0.4% (n = 1) practical training.

Table 20. Preferred mode/type of training for Spanish respondents

		N	Percent

Preferred mode/type of training	Combination of theory and practice	77	32.9%
	OnLine training	66	28.2%
	Face-to-face training	49	20.9%
	Coaching in your setting	37	15.8%
	Theoretical training	4	1.7%
	Practical training	1	0.4%

Respondents form all 4 countries would like combination of theory and practice for their training. Greece and Israel selected coaching in their setting as the second most preferred option whereas UK and Spanish respondents preferred online training as their second-best option.

SB Q12 The respondent is asked about his/her preference regarding the duration of training

Respondents were then asked to indicate the duration of training they would prefer to receive, in the question (Q12) "If you think that training to improve your understanding of attention in autism would be beneficial for you, please specify the duration of the training you would prefer". Respondents could select more than one answer. With regard to the preferred duration of training, we observe that in the UK (see Table 21), 13.4% (n = 28) did not provide an answer, 36.8% of the respondents (n = 84) prefer few hours seminar, 35.1% (n = 80) a daylong seminar, 23.2% (n = 53) a few days training and 4.4% (n = 10) duration of training was identified as "other" (see Appendix II, Duration of training, UK "other") and 0.4% (n = 1) three-month training.

Table 21. Preferred duration of training for the UK respondents

		N	Percent
Preferred duration of training	A few hours seminar	84	36.8%
	A daylong seminar	80	35.1%
	A few days training	53	23.2%
	Other	10	4.4%
	Three-month training	1	0.4%

In Greece (see Table 22), 6.3% (n = 13) did not provide an answer while most respondents (69.3%, n = 158) prefer a few days training, 17.1% (n = 39) prefer a daylong seminar, 11.4% (n = 26) a few hours seminar and 2.2% (n = 5) more than two months training.

Table 22. Preferred duration of training for Greek respondents

		N	Percent
Preferred duration of training	A few days training	158	69.3%
	A daylong seminar	39	17.1%
	A few hours seminar	26	11.4%
	More than two months training	5	2.2%

In Israel (see Table 23), most respondents (39.2%, n = 58) prefer a few hours seminar, 29.1% (n = 43) prefer a few days training, 14.9% (n = 22) would like a daylong seminar, 9.5% (n = 14) not applicable, 6.8% (n = 10) continuous supervision and 0.7% (n = 1) duration of training was identified as "other" (see Appendix II, Duration of training "other", Israel).

Table 23. Preferred duration of training for Israeli respondents

		N	Percent
Preferred duration of training	A few hours seminar	58	39.2%
	A few days training	43	29.1%
	A daylong seminar	22	14.9%
	Not applicable	14	9.5%
	Continuous supervision	10	6.8%
	Other	1	0.7%

Finally, in Spain (see Table 24), 6,.2% (n = 7) did not provide an answer, 59.8% of the respondents (n = 79) prefer a few days training, 22% (n = 29) prefer a daylong seminar, 7.6% (n = 10) prefer a few hours seminar, 6.8% (n = 9) not applicable, 1.5% (n = 2) six months or longer training, 1.5% (n = 2) duration of training was identified as "other" (see Appendix II, Duration of training "other", Spain) and 0.8% (n = 1) three-month training.

Table 24. Preferred duration of training for Spanish respondents

		N	Percent
Preferred duration of training	A few days training	79	59.8%
	A daylong seminar	29	22%
	A few hours seminar	10	7.6%
	Not applicable	9	6.8%
	Six months or longer training	2	1.5%
	Other	2	1.5%
	Three-month training	1	0.8%

The majority of the respondents from Greece and Spain seem to prefer a few days training seminar, whereas the respondents from the UK seem to prefer only a few hours to a daylong seminar, which again confirms the previous finding that teaching staff from the UK feels the more confident about their knowledge in training attention skills in children with autism. Most of the respondents from Israel prefer a few hours training while a big percentage would like a few days training.

SB Q13 The respondent is asked to rank resources he/she receives information on assessing and training attention in pupils with autism in order of preference

Afterwards, respondents were asked to rank resources of information on assessing and training attention in autism. In the question (Q13) “Where do you currently receive information on assessing and training attention in pupils with autism?” respondents were asked to rank different resources in order of their usage, 1 = being the most used resource to 9 up to 12 (according to the resources every country provided) = being the least used resource. Furthermore, respondents were given the option to provide additional resources. Results are presented as the mean value of every resource. Mean values closer to 1 are higher in the rank. However, in order to present the results in a descending order having the higher values first on the left of the stacked data figure, the mean value of each resource was subtracted from the total number of resources every partner country had.

In particular, the most used resource by the UK respondents (see Figure 48), is the *Internet* (M = 6.7), followed by *articles* (M = 6.3), and *health professionals (e.g., psychologists, speech and language therapists)* (M = 5.9). For resources that were identified as "other" see Appendix II, Resources "other", UK. In Greece (see Figure 54), the most used resource is the Internet (M = 5.7), followed by articles (M = 5.4), and seminars/workshops (M = 4.6). In Israel, (see Figure 55), the most used resource by the respondents is the health professionals (e.g. psychologists, speech and language therapists) (M = 6.3), followed by school counselor specializing in special education/special education instructor (MATIA) (M = 5.8), and colleagues at school (M = 5.5). For resources that were identified as "other" see Appendix II, Resources "other", Israel. Finally, in Spain, the most used resource is the Internet (M = 5.8), followed by articles (M = 5.3), and colleagues at school (M = 5.2).

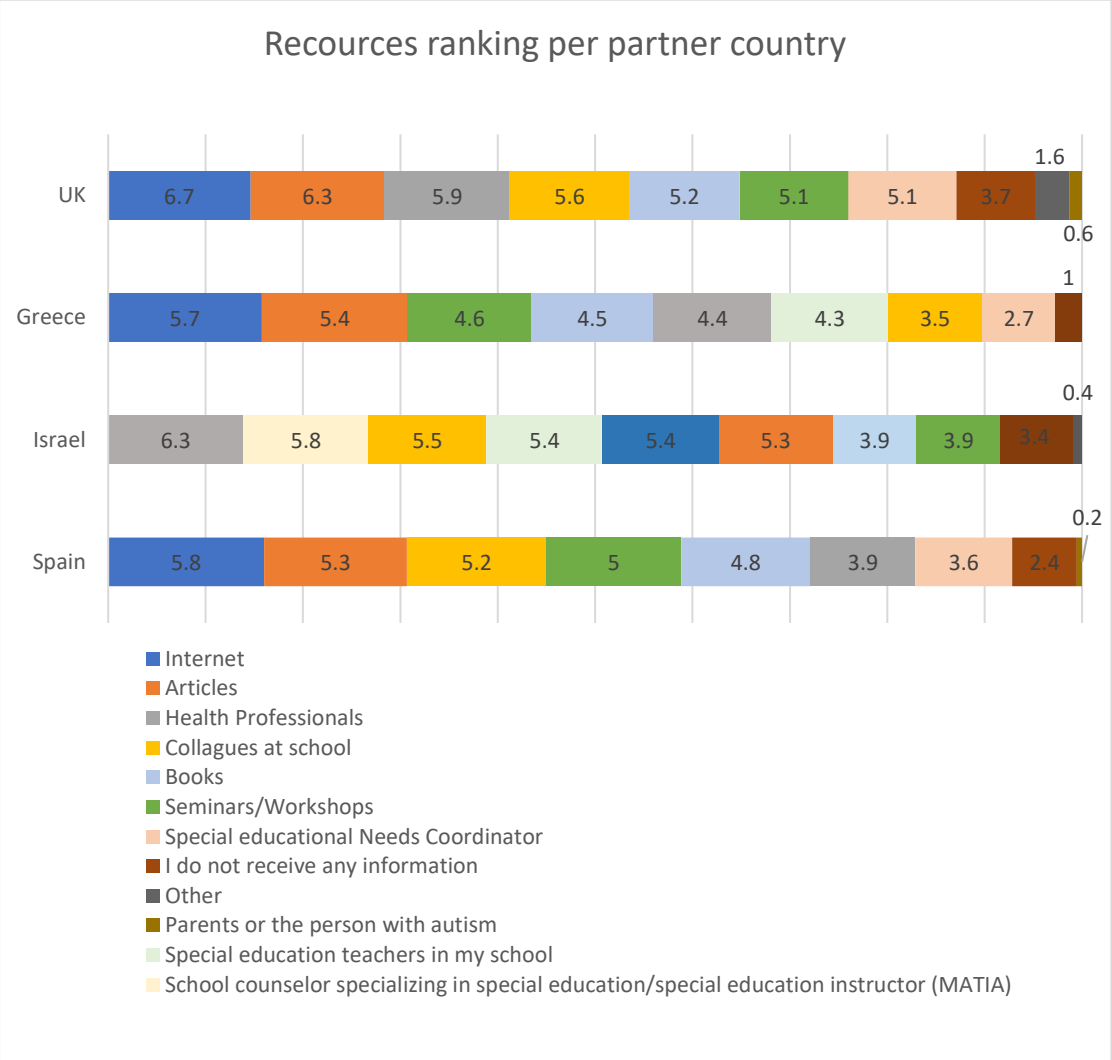


Figure 48. Resources ranking for all partner countries

Hence, respondents from the UK, Greece and Spain reported that they tend to rely on the internet and articles whereas respondents in Israel primarily turn to health professionals and school counselors for advice.

SB Q14 The respondent is asked to name any web resource he/she uses or any resource in general which he/she finds useful

Finally, the questionnaire concluded with an open-ended question (Q14) where respondents could record any web resource that they use or any resource in general that think is useful regarding attention in autism. More specifically, 21.1% of the UK respondents (n = 42) provided 30 different web resources. 6.7% (n = 2) of the respondents indicated https://www.autism.org.uk/, 3.3% (n=1) indicated https://www.autismeducationtrust.org.uk/ and 3.3% (n=1) mentioned https://nasen.org.uk. All recorded web resources for the UK respondents are presented in Table 25.

Table 25. Useful web resources for UK respondents

Q14: Web resources you use or any resource in general which you find useful:	N	Percent
https://www.autism.org.uk/	2	6.7%
https://www.adhdfoundation.org.uk	1	3.3%
https://www.autismeducationtrust.org.uk/	1	3.3%
https://nasen.org.uk	1	3.3%
https://ginadavies.co.uk/parents-services/professional-shop/	1	3.3%
https://senmagazine.co.uk	1	3.3%
https://www.intensiveinteraction.org	1	3.3%
http://www.thinkingautismguide.com	1	3.3%
2shop/pf-shop/	1	3.3%
http://www.autismtoolbox.co.uk/home	1	3.3%
https://www.aane.org	1	3.3%
https://www.autismwestmidlands.org.uk/	1	3.3%
https://barrycarpentereducation.com	1	3.3%
Future learn courses	1	3.3%
advisory service	1	3.3%
AutCo, a local company	1	3.3%
https://www.blacksheeppress.co.uk	1	3.3%
https://www.tes.com/teaching-resources/hub/whole-school/special-educational-needs	1	3.3%
https://chatterpack.net/blogs/blog/list-of-online-resources-for-anyone-who-is-isolated-at-home	1	3.3%
Future learn	1	3.3%
https://www.autism.net/symposium-2020?gclid=EAIaIQobChMI2668mMro6wIVkmDmCh2wTAQzEAAYASAAEgInDfD_BwE	1	3.3%
https://www.elklan.co.uk	1	3.3%
https://www.ingentaconnect.com/content/bild/gap	1	3.3%
https://developingchild.harvard.edu	1	3.3%

Follow autistic people on social media: Twitter and linkedin	1	3.3%
https://www.autistica.org.uk	1	3.3%
https://www.autismspeaks.org	1	3.3%
https://www.makaton.org	1	3.3%
https://www.socialthinking.com	1	3.3%
https://www.widgit.com/products/inprint/index.htm	1	3.3%
https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=98290&section=1.1.1	1	3.3%
http://scerts.com/resources/	1	3.3%
Range of Facebook closed groups for SEN	1	3.3%
https://www.scottishautism.org/services-support/support-professionals/autism-toolbox	1	3.3%
Sensible SENCo on Facebook	1	3.3%
https://www.specialneedsjungle.com	1	3.3%
https://thegirlwiththecurlyhair.co.uk	1	3.3%
https://educationendowmentfoundation.org.uk	1	3.3%
https://www.twinkl.co.uk/resources/send-inclusion-teaching-resources/specific-learning-difficulty-areas-of-need-primary-send-inclusion-key-stage-1/autistic-spectrum-disorder-areas-of-need-primary-send-inclusion-teaching-resources	1	3.3%
Youtube	1	3.3%
https://www.childrenssociety.org.uk	1	3.3%
autistics.org.uk	1	3.3%
https://autismawarenesscentre.com/	1	3.3%

In Greece, 25.5% of the Greek respondents, (n = 52) provided 43 different web resources. 15.4% (n = 14) of the respondents indicated www.noesi.gr, 13.2% (n = 12) www.specialeducation.gr and 9.9% (n = 9) https://scholar.google.com/. All recorded web resources for Greek respondents are presented in Table 26.

Table 26. Useful web resources for Greek respondents

Q14: Web resources you use or any resource in general which you find useful:	N	Percent
www.noesi.gr	14	15.4%
www.specialeducation.gr	12	13.2%
https://scholar.google.com/	9	9.9%
www.autismhellas.gr	6	6.6%
https://upbility.gr/	3	3.3%
https://www.researchgate.net/	3	3.3%
www.autismhellas.gr	3	3.3%
www.autism.com	3	3.3%
http://prosvasimo.iep.edu.gr/	3	3.3%
www.autism.org.uk	2	2.2%
www.eseepa.gr	2	2.2%
www.eidikospaidagogos.gr	2	2.2%
www. teacch.com	2	2.2%
www.autismtoolbox.co.uk	1	1.1%
www.scottishautism.org	1	1.1%
www.esaea.gr	1	1.1%
www.eepe.gr	1	1.1%
www.iautistic.com	1	1.1%
www.autismgreece.gr	1	1.1%
www.especial.gr/	1	1.1%
www.aspergerhellas.org	1	1.1%
http://www.laskaridisfoundation.org/	1	1.1%
https://www.edu-enosi.gr/	1	1.1%
www.ebooks4greeks.gr	1	1.1%
www.youtube.com	1	1.1%
www.facebook.com	1	1.1%
http://www.pi-schools.gr/special_education/aps-depps autismos.pdf	1	1.1%
pubmed	1	1.1%
journal of autism and developmental disorders	1	1.1%
Disability and society	1	1.1%
alma-amea.gr	1	1.1%
https://www.edutopia.org/	1	1.1%
http://www.disabled.gr/	1	1.1%
https://www.noesis.edu.gr/	1	1.1%
www.transformautismeducation.org/gr/	1	1.1%
https://www.aota.org/	1	1.1%

https://www.autismspeaks.org/	1	1.1%
https://www.academia.edu/	1	1,1%
https://www.asha.org/	1	1.1%
https://catherinefaherty.com/	1	1.1%
https://www.autismeurope.org/	1	1.1%
http://approaches.gr/el/	1	1.1%
https://www.cdc.gov/	1	1.1%

As for Israeli respondents, 22.3% of them (n = 33) provided 17 different web resources. 21.2% (n = 7) respondents indicated https://www.facebook.com/, 15.2% (n = 5) https://alut.org.il/ and 9.1% (n = 3) https://scholar.google.com/. All recorded web resources for Israeli respondents are presented in Table 27.

Table 27. Useful web resources for Israeli respondents

Q14: Web resources you use or any resource in general which you find useful:	N	Percent
https://www.facebook.com/	7	21.2%
https://alut.org.il/	5	15.2%
https://www.google.com	3	9.1%
https://scholar.google.com/	3	9.1%
https://edu.gov.il/hnm/heb/subject/Educational-Frames/Matya/Pages/loby-Matya.aspx	2	6.1%
https://www.hebpsy.net/	2	6.1%
https://www.autismspeaks.org/	1	3.0%
https://www.youtube.com/	1	3.0%
https://poh.education.gov.il/Pages/HomePage.aspx	1	3.0%
forums on different websites	1	3.0%
https://isaac.org.il/	1	3.0%
https://www.betipulnet.co.il/	1	3.0%
https://ogen.cet.ac.il/	1	3.0%
https://attengo.co.il/	1	3.0%
websites about autism	1	3.0%
https://pubmed.ncbi.nlm.nih.gov/	1	3.0%
https://www.itu.cet.ac.il/	1	3.0%

Finally, half of the Spanish respondents (50.4%, n = 57) provided 52 different web resources. 24.5% (n = 24) respondents indicated https://arasaac.org/, 11.2% (n = 11) https://elsonidodelahierbaelcrecer.blogspot.com/ and 4.1% (n = 4) http://aetapi.org/. All recorded web resources for Spanish respondents are presented in Table 28.

Table 28. Useful web resources for Spanish respondents

Q14: Web resources you use or any resource in general which you find useful:	N	Percent
https://arasaac.org/	24	24.5%
https://elsonidodelahierbaelcrecer.blogspot.com/	11	11.2%
http://aetapi.org/	4	4.1%
https://www.soyvisual.org/	3	3.1%
http://aulaabierta.1/araword_inicio	3	3.1%
https://www.orientacionandujar.es/	3	3.1%
https://autismodiario.com/	2	2.0%
Araword	2	2.0%
http://autismo.org.es	2	2.0%
http://www.autismonavarra.com/	2	2.0%
http://planetavisual.catedu.es/	2	2.0%
Pictocuentos	1	1.0%
Autismind	1	1.0%
appyautism.com	1	1.0%
https://ceapat.imserso.es/ceapat_01/index.htm	1	1.0%
http://www.fundacionorange.es/	1	1.0%
https://pictoselector.wordpress.com/	1	1.0%
https://entretea3.wordpress.com/	1	1.0%
https://www.pictotraductor.com/	1	1.0%
https://play.google.com/store/apps/details?id=com.orange.dictapicto&hl=es	1	1.0%
https://activitea.es/	1	1.0%
http://maestraespecialpt.com/	1	1.0%
Instagram	1	1.0%
Pictorina	1	1.0%
Pictotraductor	1	1.0%
Pictoeduca	1	1.0%
https://www.assistiveware.com/es/	1	1.0%
http://siembraestrellas.blogspot.com/	1	1.0%
http://22dibuja.blogspot.com/	1	1.0%
yoga for kids	1	1.0%
http://educasaac.educa.madrid.org/	1	1.0%
https://www.autismresearchcentre.com/arc_tests	1	1.0%
https:/elsonidodelahierbacrecer.blogspot.com	1	1.0%
https://infoautismo.usal.es/	1	1.0%
https://www.aulapt.org/	1	1.0%
https://autismodiario.com/	1	1.0%
Pagina web de AETAPI	1	1.0%

artículos de FEAPS	1	1.0%
Revista de neurología	1	1.0%
Libros de Anabel Cornago	1	1.0%
Marc Monfort,	1	1.0%
social media	1	1.0%
https://www.pictoaplicaciones.com/	1	1.0%
Psychologist from Ubeda autism center	1	1.0%
Research Journals	1	1.0%
Basque Government Website	1	1.0%
Videos with children stories	1	1.0%
Bibliography on educational methods	1	1.0%
chats y foros profesionales	1	1.0%
Any Quizz game	1	1.0%
DUA Seminar	1	1.0%
Internet blogs	1	1.0%

Limitations

Despite all careful planning and piloting, methodological limitations of the survey were acknowledged mainly in relation to the number of respondents per country, uniformity of the sample, content understanding due to different languages the questionnaire was translated into and statistical methodology.

Conclusions

The QTTA project was an opportunity to provide an insight on the topic of attention in autism for teachers and professionals working with children with autism. 674 respondents completed the questionnaire with the majority of them working as a teacher. Among the findings, it was highlighted that participants from the UK and Israel rated attention difficulties as the second most common difficulties in children with autism, whereas for respondents in Greece and Spain attention difficulties appeared to be the third most common area of difficulty. Admittedly, impairments to attention have often been considered to be associated with ASD (Keehn et al., 2013; Mayes & Calhoun, 2007).

Furthermore, the majority of the respondents in all countries stated that attention means: *Concentration / engagement / focus on task/activity / person / sustaining focus / interest / sustained attention.* Thus, teachers perceive attention similarly as Petersen and Posner (1990, 2012), who have argued that attention consists of three functionally independent

attention networks: the alerting, orienting, and executive control networks. The alerting network (sustained attention) allows the individual to maintain a state of alertness and sustain attention to a specific stimulus; the orienting network (selective spatial attention) directs attention to specific sensory stimuli and locations; and the executive control network (attention control) allows the resolution of conflicting attentional information.

In addition, UK respondents feel more confident with regard to knowledge on attention difficulties in autism. With the exception of the UK, in the other 3 countries the majority of the respondents stated that they have little confidence.

It is worth mentioning that respondents in all partner countries associate *Communication difficulties and Difficulties in social interaction* to attention. It has well been documented that attention deficits may affect early social development particularly by disrupting joint attention (Schietecatte et al., 2012; Mundy et al, 2007), regulation of social emotional arousal (Garon et al., 2009; Keehn et al., 2013) and flexibility in behaviour (Townsend et al., 2001; Senju et al., 2004).

Most importantly, respondents in all partner countries stated that they find links between attention and learning for children with autism (Erickson et al., 2015). Research demonstrates that attention deficits in children with autism can seriously affect their school performance (Keen et al., 2016; May et al., 2015). More specifically, respondents from all countries find links of attention with *Difficulties in reading and writing skills* and *Difficulties in mathematics skills.* These findings are in the same line with those of Stevens and Bavelier (2012), who found attention to play an important role in the development of both literacy and numeracy. Furthermore, Stern and Shalev (2013) found that poor performance in reading and reading comprehension was related to difficulties in sustained attention. Similarly, in a follow-up study, May et al. (2015) also found that attention switching correlated with both math and reading performance in ASD.

In terms of how teaching staff in the four countries assess attention, the majority of the respondents answered that they discuss the pupils' behaviors with other colleagues or parents and they observe the pupils' behavior while keeping free notes.

Moreover, the majority of the participants in the 4 countries stated that they do not feel confident in their knowledge of attention and autism, apart from the UK participants who stated the opposite. As a result, the vast majority of them answered that they would find training in attention and autism beneficial.

Teaching staff in the four countries reported that they use similar strategies to train attention in children with autism. Israeli respondents tend to use more *Activities in which the children are expected to select relevant information and suppress irrelevant information* than the UK, Greek and Spanish respondents. *Activities in which the children have to change attention from one area of focus and redirect it towards a different area* and *Activities in which the children have to focus over a long period of time which is gradually increased* are mostly used by Greek and Israeli respondents, while *Activities in which the children have to share interest for an object/toy with an adult or a peer* are mostly used by Greek, Israeli and Spanish respondents. Thus, although the majority of the teachers state that they do not feel confident with regard to knowledge on attention difficulties in autism, they instinctively use strategies to train all three functionally independent attention networks (Petersen & Posner, 2012).

Finally, in terms of the resources used in order to improve their knowledge on attention, respondents from the UK, Greece and Spain reported that they tend to rely on the internet and articles, whereas respondents in Israel primarily turn to health professionals and school counselors for advice.

Concluding, teachers in all 4 countries find links of attentional atypicalities not only with social interaction and communication difficulties in autism, but also with academic skills in school settings.

Recommendations

It is pivotal for preservice and in-service teachers to be educated in training attention in autism thus promoting successful learning for children with autism in a school environment. Future researchers should more investigate the effects of attention training on the improvement of academic skills in autism, aiming to develop intervention programs for schools.

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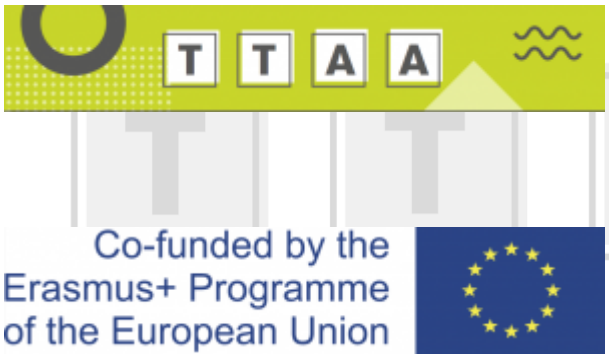
Appendix I Questionnaire of teachers' perceptions related to attention in autism (QTPAA)

QTPAA - English

Start of Block: Consent Form



Questionnaire of teachers' perceptions related to attention in autism (QTPAA) Dear colleague, The following questionnaire is part of the data collection process for an Erasmus+ research project entitled 'Teacher Training and Attention in Autism (TTAA)'. The project is funded by the European Commission and involves partner organisations from four countries: Israel, Greece, Spain and the UK. The partner organisations include schools, universities and a teacher-training organisation. **What are the aims of the project?** TTAA aims to promote understanding on the topic of attention in autism for teachers and other professionals working with children with autism as well as provide relevant free resources in the four participating countries. We are particularly interested to find out about current practices on assessing and training attention skills in children with autism in schools. **How can I be involved?** The first stage in the project is to gather research about attention in autism which includes asking education professionals to complete a questionnaire. In order to

be eligible to complete the questionnaire, you need to: · live and work in the UK, · work or have worked with primary age children (5-11 years) and · currently work or have worked with at least one child with autism at some point in your career. **What about confidentiality?** The questionnaire is completely anonymous, and you can choose to withdraw at any time while you are completing it. Once submitted, all questionnaires will be given codes which means that no one will be able to identify individual submissions. You will have the right to gain access to the findings of the study even if you withdraw, by contacting Dr Lila Kossyvaki (a.kossyvaki@bham.ac.uk), academic lead for the UK (University of Birmingham). **When can I complete the questionnaire?** The questionnaire will remain open from **15th April until 30th June 2020** and can be completed at any point during this time. When completing the questionnaire, please remember that there are no right or wrong answers; just share your personal experience and current knowledge. **What does the questionnaire involve?** The questionnaire starts with some demographic information about yourself (e.g. current position, teaching experience, experience with autism) and then explores your views, knowledge and experience in attention and autism. It will take you about 20 minutes to complete it. Should you require more information on the project, please contact Dr Lila Kossyvaki (a.kossyvaki@bham.ac.uk).

○ I have read the information above and I consent to participate

End of Block: Consent Form

Start of Block: Section A: Demographic information

*

Q1 The country/region you work in (**please ensure you answer both 1a-country and 1b-type of region**):

- [ ] England
- [ ] Northern Ireland
- [ ] Scotland
- [ ] Wales
- [ ] Urban (more than 10,000 residents)
- [ ] Semi-urban (between 2,500 and 10,000 residents)
- [ ] Rural (less than 2,500 residents)

Q2 What is your current position?

- ○ Teacher in mainstream school
- ○ Teacher in special school
- ○ Autism Advisory Teacher
- ○ Teaching Assistant
- ○ Special Educational Needs Coordinator (SENCo)
- ○ Therapist (i.e. psychologist, speech and language therapist, etc.)
- ○ Other professional, please specify:

_____

Q3 What is your gender?

- ○ Male
- ○ Female
- ○ Not defined
- ○ Other, please specify: _____

Q4 What is the highest qualification you have achieved?

- ○ Undergraduate degree
- ○ Postgraduate degree
- ○ Doctorate
- ○ Other, please, specify: _____

Q5 How many years of experience in school have you got in total?

- ○ 0-10 years
- ○ 11-20 years
- ○ 21 years or more

Q6 How many years of your school experience is in Special Education (e.g., specialist provision or working with children with special needs in mainstream provision)? Please, specify in years:

_____

Q7 What is your age?

- ○ 20-29 years
- ○ 30-39 years
- ○ 40-49 years
- ○ 50-59 years
- ○ 60+ years

Q8 Are you currently working with a pupil/pupils with autism?

- ○ Yes
- ○ No

Q9 Have you worked a pupil/pupils with autism at some point earlier in your career?

- ○ Yes
- ○ No

Q10 If you are currently working or have worked with a pupil/pupils with autism, how would you describe the severity of autism in that pupil/those pupils?

- ○ Not applicable
- ○ Mainly mild
- ○ Mainly moderate
- ○ Mainly severe
- ○ I've had pupils with multiple levels of autism severity

Q11 Have you received any training in autism in addition to that covered through any qualification needed for your current role (e.g., teacher training or teaching assistant qualification)?

- ○ Yes
- ○ No

Q12 If you have received training in autism, please specify its length (you can select more than one answer):

- ☐ Not applicable
- ☐ a few hours seminar
- ☐ a full day seminar
- ☐ a few days training

☐ Other, please, specify:

_____

End of Block: Section A: Demographic information

Start of Block: Section B: Academic performance and behavioral patterns in Autism

Q1 With regard to the learning process in autism, rank the following indicators in order of their importance (1= being the most important to 8 or 9= being the least important). Click on each option first and then drag it to the preferred order.

_____ Delayed speech or no speech

_____ Communication and/or social difficulties

_____ Repetitive behavioral patterns and/or restricted interests

_____ Attention difficulties

_____ Challenging behaviour/self-injurious behaviour

_____ Difficulty in adapting to environmental changes

_____ Difficulty in understanding and expressing emotions

_____ Sensory hyper/hypo sensitivity

_____ Other, please specify

Q2 What does attention mean for you?

_____

_____

_____

_____

_____

Q3 To what extent is attention relevant in the context of autism? Please justify your response.

_____

_____

_____

_____

_____

Q4 Please read the following statements and state whether you agree the behaviors they describe are related to attention in autism. If you are unsure about a statement, please select “I am not sure”.

	Agree	Disagree	I am not sure
Shift eye gaze or turn head towards a specific stimulus	○	○	○
Focus only on the stimuli that is relevant for the current task	○	○	○
Withhold an irrelevant response	○	○	○
Change what one is currently focusing on (disengage from	○	○	○

one thing and move to a different thing)			
Maintain focus over time on a specific task	○	○	○
Focus on something because another person is focusing on it	○	○	○
Attention is the same in all pupils with autism	○	○	○
It is easier for pupils with autism to focus on (or shift their eye gaze to) objects rather than people	○	○	○
Pupils with autism can easily change their focus of attention	○	○	○
Some pupils with autism have also Attention -Deficit /Hyperactivity Disorder (ADHD)	○	○	○
Pupils with autism can be very focused on items or topics of personal interest	○	○	○

Q5 Please read the following statements and state whether you agree attention is related to them. If you are unsure about a statement, please select “I am not sure”.

	Agree	Disagree	I am not sure
Difficulties in following other people’s eye gaze	○	○	○
Delay in language development	○	○	○
Communication difficulties	○	○	○
Difficulties in social interaction	○	○	○
Restricted and repetitive behaviors and interests	○	○	○
Difficulties in reading and writing skills	○	○	○
Difficulties in mathematics skills	○	○	○

Q6 Please read the following attention assessment methods and rate the frequency you apply them with children with autism in your educational setting.

	Never	Rarely	Sometimes	Often	Always
Observe the pupils’ behaviour	○	○	○	○	○

and keep free notes					
Observe the pupils' behaviour using a specific checklist (e.g., a behavioral checklist)					
Score the correct and incorrect responses during a learning task					
Record how long a pupil stays focused on a given task					
Record the time it takes a pupil to successfully complete an academic task					
Discuss the pupils'					

behaviors with other colleagues or parents					
Other, please specify:	○	○	○	○	○

Q7 Read the following attention activities and rate the frequency you apply them with children with autism in your educational setting.

	Never	Rarely	Sometimes	Often	Always
Activities in which the children are expected to select relevant information and suppress irrelevant information (e.g. listen to the teacher while blocking out the noise of other children working independently)	○	○	○	○	○
Activities in which the children have to change attention from one area of focus and redirect it towards a different area (e.g., copy	○	○	○	○	○

some text from the board)					
Activities in which the children have to focus over a long period of time which is gradually increased (e.g., read a book, complete a writing task)	○	○	○	○	○
Activities in which the children have to share interest for an object/toy with an adult or a peer (e.g., work in pairs with a peer to complete an experiment/practical project)	○	○	○	○	○

Q8 Do you use software/apps for training attention? If yes, please specify:

○ Yes _____

○ No

Q9 How confident do you feel about your knowledge on attention difficulties in autism?

○ Not confident at all

○ A little confident

○ Quite confident

○ Very confident

Q10 Do you think that training to improve your understanding of attention in autism would be beneficial for you?

○ Yes

○ No

Q11 If you think that training to improve your understanding of attention in autism would be beneficial for you, please indicate the mode/type of training you would prefer to receive (you can select more than one answer):

☐ Not applicable

☐ Theoretical training

☐ Combination of theory and practice

☐ Face-to-face training

☐ Online training

☐ Coaching in your setting

☐ Other, please specify

_____

Q12 If you think that training to improve your understanding of attention in autism would be beneficial for you, please specify the duration of the training you would prefer (you can select more than one answer):

- ☐ Not applicable
- ☐ A few hours seminar
- ☐ A daylong seminar
- ☐ A few days training
- ☐ Other, please specify

_____

Q13 Where do you currently receive information on assessing and training attention in pupils with autism? Please rank the following options (1= being the most used resource to 10=being the least used resource). Click on each option first and then drag it to the preferred order.

_____ I do not receive any information

_____ Articles

_____ Internet

_____ Books

_____ Seminars/Workshops

_____ Special Educational Needs Coordinator

_____ Colleagues at school

_____ Health Professionals (e.g., psychologists, speech and language therapists)

_____ Other (please, specify):

Q14 Please name any web resource you use or any resource in general which you find useful:

_____

End of Block: Section B: Academic performance and behavioral patterns in Autism

Appendix II Answers under the category "other"

SA Q2 Current position "other"

UK

1. Specialist Teacher (Autism)
2. Christian Distinctiveness Adviser
3. Education consultant
4. Educational consultant and teacher trainer. Previously HT in a junior school
5. Head of school
6. Head teacher with SenCo experience
7. Headteacher Special School
8. Inclusion Support Specialist Teacher: Children with complex SEND
9. Independent Autism consultant & trainer
10. Principal Teacher in an Autism Provision within a mainstream primary school
11. SEND Officer
12. Senior SEN Casework Officer
13. Specialist practitioner autism
14. Supply teacher after 20+ years teaching
15. Teacher employed by a special school placed within a tier 4 CAMHS LD hospital
16. Trainee teacher

Greece

1. General Education teacher in Center of Educational and Consulting Support
2. SEND private teacher
3. Autism Day Center
4. Early Intervention Day Center
5. Foreign Language Institute
6. Center of Educational and Consulting Support
7. University
8. Private language teacher-children with or without autism

Israel

1. Head of kindergarten
2. Language coordinator

Spain

1. Social educator

SA Q4 Qualifications "other"

Israel

1. Special education undergraduate
2. Behavioral science and an academic transition to special education

Spain

1. Secondary school

SA Q12 Length of training "other"

UK

1. I work in an autism specialist school and we have in house and professional development training every Friday.
2. 15 hours over a number of weeks.
3. As well as completing a few INSET days related to autism, I have also completed a short Open University course (15 points) about 'Understanding Autism', as well as lectures as part of my Master's degree
4. I am a parent of 2 young adults and potentially a person with autism. I have received training in various forms and durations. The best is definitely that designed and/or delivered by autistic people.
5. Ongoing training.
6. Ongoing cpd as part of doctorate study- but formally, only level 1 NAS accredited qualification as part of whole school CPD
7. Post graduate module
8. University module on Special Educational Needs, in house training and professional reading. Recently University of Bath Future Learn modules.

Israel

1. A course through a private facility
2. Courses in academic facilities, in-school seminars and independent reading
3. A course
4. Courses taken as part of a certificate and workshops throughout the year
5. Training provided by SENCO
6. Courses in academic facilities, in-school courses
7. Workshops, online research and a certificate in behavioral analysis
8. Workshops and training throughout the years while working in education
9. I worked as a caregiver in a home behavioral program for kids with autism, during this time an instructor trained me on how to work with kids with autism in general and with the specific kid i worked with
10. Workshops, seminars, lectures and conferences all about ASD
11. Independent reading and workshops
12. Workshops and courses as part of my MA
13. Workshops instructed by occupational therapists and psychologists
14. A course as part of my studies and workshops

Spain

1. Several online courses
2. Many kinds and length (500 hours)
3. Several courses (500 hours approx.)

SB Q1 Indicators "other"

UK

1. Adult support
2. Attachment difficulties and trauma in addition
3. Co morbidity
4. Difficulty in supplying additional support to Parents in the home setting
5. Poor mental health
6. sleep and selective - eating difficulties
7. unstructured time planning and organizational skills

Greece

1. Egocentric thinking
2. Relation to Intelligence Quotient
3. Difficulties in daily living activities
4. Attention-deficit/hyperactivity disorder (ADHD)
5. Motor impairment

Spain

1. Executive functions

SB Q6 Additional assessment methods

UK

1. As SENCO, I support others to put these strategies in place. The level to which these can be dimensions depends on how much time they have. E.g., if you want to get to the bottom of a child's challenging behaviour it is vital to record it (ABC/ functional analysis) but if you don't have dedicated time to this, it is really difficult.
2. Depends on needs of the child
3. Discuss with child how they focused on a task.
4. Discussion with the pupil
5. Gathering the child's views directly using non-verbal methods such as strength cards
6. I would mostly carry out art activities and chat with the children. Sometimes I would ask them to explain their creative ideas and report back to the class teacher
7. Look for trigger points and what raises level of anxiety

Greece

1. Exercises and informal testing
2. Self-monitoring
3. Comparison of the same activity in different periods of time
4. Audio-visual material use

Israel

1. a combination of everything
2. I use a more concise verbal feedback rather than recording things in forms since there are no standards or regulations

3. a talk with the student himself
4. behavioral plans

Spain

1. Asking the student how to help him/her
2. Showing the student adequate patterns to do the task
3. Paying special attention to the moments when he/she uses non-relevant objects to self-stimulate
4. Providing enough time to develop tasks
5. Assessing the student behaviour in natural contexts (playground, excursions) with high social demands

SB Q11 Mode/type of training

UK

1. I would like to hear the autistic community's response to this suggestion and to the topic in general and would rather be informed by that.

Greece

1. On line platform
2. Combination of face-to-face and online training
3. Training on a daily basis for at least two weeks

SB Q12 Preferred duration of training "other"

UK

1. As long as it takes but online
2. Hourly meetings across a period of time to review impact of learning on classroom practice
3. Input and then regular follow up
4. Short focused sessions over a period with follow up times so skills can be trialed and refined
5. Short sessions at regular intervals
6. Sometimes a split session, with a chance for practical application before final follow up session.
7. The equivalent of a day or two, but spread over several weeks with time to put learning into practice
8. Training that could last a few months

Israel

1. Sometimes in my free time

SB Q14 Resources "other"

UK

1. ASD outreach team

2. Autism Outreach Team. I am SENCO so would be responsible for training in school
3. Autism specialists
4. Daughter is an ASD specialist.
5. Observing students in classroom or other
6. Training is very poor at school. I read independently on autism presentation
7. University tutors

Israel

1. SENCO, a mother to an autistic kid and life experience
2. professional knowledge and experience