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TEACHERS' AWARENESS OF TWICE-EXCEPTIONAL STUDENTS AND EDUCATIONAL APPROACH TOWARD THEM: A COMPARISON OF TURKEY, POLAND, THE CZECH REPUBLIC, ITALY, AND BULGARIA

ABSTRACT. Şentürk Şener, Gierczyk Marcin, Dobosz Dagmara, İlhan Emecan Banu, Boneva Daniela, Gallo Florian, Kefeli İdil, Krejčová Lenka, Moroń Marcin, Vural Murat, Özmen Serdar, Šoltis Smith Katarína, *Teachers' Awareness of Twice-Exceptional Students and Educational Approach Toward them: A Comparison of Turkey, Poland, the Czech Republic, Italy, and Bulgaria* [Świadomość nauczycieli dotycząca uczniów o podwójnej wyjątkowości i stosowane wobec nich podejścia edukacyjne: analiza porównawcza Turcji, Polski, Czech, Włoch i Bułgarii] *Studia Edukacyjne* no. 76, 2025, Poznań 2025, pp. 159-173. Adam Mickiewicz University Press. ISSN 1233-6688. Submitted: 01.06.2025. Accepted: 01.07.2025. DOI: 10.14746/se.2025.76.11

The study aimed to investigate the teachers' awareness regarding twice-exceptional students. We investigated two domains of such awareness, namely, awareness of special needs, learning difficulties, and socio-emotional problems faced by the twice-exceptional student and self-efficacy in the area of instructional strategies, legal regulations, and knowledge about how to proceed with the twice-exceptional student. Our research has shown that teachers have a relatively high level of awareness of the specific needs of students with special educational needs, regardless of the cultural context. Teachers from Turkey, Poland and Bulgaria showed a higher awareness compared to their colleagues from the Czech Republic and Italy.

Key words: twice-exceptionality, educational approaches, comparative study, teachers' awareness

Introduction

Twice-exceptionality (2E) in students means having high-performance potential in terms of ability or talent combined with a disability that suppresses the pupil's ability to achieve according to their potential (Kalbfleisch & Iguchi, 2008; Maddocks, 2020). Over the past four decades, awareness of the phenomenon of twice-exceptionality among students has grown (Reis et al., 2022), and many countries are now trying to organise their education systems accordingly. An important factor determining the effectiveness of 2E education systems around the world is the proper preparation of teachers (Lee & Ritchotte, 2018). They play a key role in identifying and supporting this group of students, so it is important that they are aware of their specific characteristics and difficulties. Research on teachers' perceptions and experiences of 2E students is still limited (LeBeau, et al., 2025) and indicate that they tend to treat giftedness and difficulties as separate spheres, rather than as a single, complex student identity (Sakar & Baloglu 2025). There is also a gap in research on awareness of the 2E phenomenon across different education systems.

Cultural context in dealing with 2e issues

The treatment of twice-exceptional (2e) students varies from country to country, with some education systems being more advanced in recognising and meeting their specific needs than others. In *Turkey*, research on twice-exceptional students has attracted the attention of researchers and educators for several years. Legislation related to the education of gifted and special needs students does not directly refer to twice-exceptional students, resulting in a lack of formal recognition of 2E students by legislation and indicating deficiencies in policy and implementation strategies to meet the needs of this unique student population (Şentürk et al., 2022; İlhan Emecan, 2023). In *Poland*, gifted students belong to a group of students with special educational needs. They are provided with psychological and pedagogical support, and their work with them is regulated by legal acts and documents (Bartnikowska & Antoszevska, 2017). In recent years, there has been an increased interest in the issue of twice-exceptional pupils in Poland, both in the literature on the subject and in legislation (Gierczyk & Hornby, 2021). In *Bulgaria*, the term twice-exceptionality is not well known. When a student displays both learning difficulties and talent, priority is usually given to the difficulties. The concept of twice-exceptionality cannot be found in any official document or regulation. The Preschool and School Education Act and the Inclusive Education Ordinance regulate support for children and pupils with learning difficulties and gifted children, but they are seen as two completely different and independent categories (Gramatikov, 2007; Struthers, 2016). In the *Czech*

Republic, as in Poland, gifted students are categorised as students with special educational needs. The Czech education system recognises twice-exceptional pupils; i.e. they are formally identified by state pedagogical and psychological counselling centres, which also prepare a list of guidelines for schools (Smítková, 2017; Němcová, 2019). In *Italy*, the legislation recognises the educational needs of gifted students in several policies, and these students are also included among those with special educational needs (Biedrzycki, 2024). In Italy, many initiatives are being undertaken focusing on the professional development of teachers and educators to equip them with the skills necessary to identify and effectively teach 2E students (Minnaert, 2024).

Research Methodology

The current study examined teachers’ awareness of the phenomenon of twice-exceptionality and their knowledge of educating such students. The study identified three research questions:

- 1. What is the teachers’ awareness of the specific functioning of twice-exceptionality students, including their learning difficulties and social and emotional problems?
- 2. What is the teachers’ knowledge of legal regulations and teaching strategies for 2E students?
- 3. What are the differences in teachers’ level of awareness of the 2E phenomenon in different countries?

The study was carried out in accordance with the Declaration of Helsinki and approved by the Ethics Committee at the Ondokuz Mayıs University (2024-174).

Participants

One thousand thirty-three teachers from five countries participated in the study (Tab. 1). The distribution of men and women differed across the countries ($\chi^2 = 96.10$; $p < .001$; Cramer’s $V = 0.31$). Countries also differed in the age distribution ($\chi^2 = 469.47$; $p < .001$; Cramer’s $V = 0.46$).

Table 1
Nationality, age, and gender of the participants

Whole sample	N 1033	%
Nationality		
Bulgaria	227	21.98

cont. table 1

Whole sample	N 1033	%
Czech Republic	72	6.97
Italy	212	20.52
Poland	232	22.46
Turkey	290	28.07
<i>Gender</i>		
Women	865	83.74
Men	168	16.23
<i>Age</i>		
20-30	424	41.05
31-40	198	19.17
41-50	266	25.75
51+	145	14.04

Measures

Items were taken from the Twice Exceptional Awareness Scale (İlhan-Emecan et al., 2024). Four items measuring empathy refer to belief that being a teacher of a twice exceptional student requires different skills or competences, awareness that gifted/talented students may also experience learning difficulties/disabilities from different perspectives, awareness that a student can be both gifted/talented and in need of special education, and awareness that twice-exceptional students may experience social and emotional problems. Three items measuring self-efficacy refer to possessing sufficient knowledge about how to proceed when they consider a student is twice-exceptional, awareness of the legal regulations regarding twice-exceptional students, and awareness of the instructional strategies for 2E students. Items were translated from English into national languages and tested against the original wording. Response scale ranged from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The mid-point of the response scale was "I am undecided" and was used as a reference point. Because of lack of established measurement invariance between the language versions and unequal internal consistencies of the two sets of items across the studied samples, we conducted the analysis on the level of individual items.

Data analysis

First, we inspected the descriptive statistics. Then, we compared the means to the reference point of the response scale to quantify whether teachers report overall awareness (reflected by a significant positive deviation from point 3) or lack of awareness (reflected by a significant negative deviation from point 3). We conducted MANOVA for two sets of dependent variables and country as between-subject factor followed by a separate univariate ANOVA with country as the main factor. We used Tukey's *post hoc* tests to examine differences between countries. If a given dependent variable is correlated with age or gender, we rerun the ANOVA controlling for gender and/or age.

Results

Descriptive statistics

Means, standard deviations, and intercorrelations within the studied variables are given in Table 2. Teachers generally reported high awareness in

Table 2

Means, standard deviations, deviations from the reference point,
and intercorrelations among the studied variables in all participants

Variable	M (SD)	Deviation from mid -point	1	2	3	4	5	6
1. Empathy Skills required	4.16 (0.86)	43.02***						
2. Awareness of learning difficulties	4.29 (0.80)	51.40***	.36***					
3. Awareness of special needs	4.30 (0.84)	49.35***	.33***	.44***				
4. Awareness of social problems Self-efficacy	4.39 (0.68)	65.16***	.42***	.48***	.48***			
5. Knowledge how to proceed	2.65 (1.02)	10.94***	.01	.07	.08	.10		
6. Legal regulations	2.45 (1.04)	16.86***	-.01	.01	-.01	.02	.58***	
7. Instructional strategies	2.63 (1.08)	10.92***	.13***	.09**	.15***	.17***	.58***	.63***

Note. *** $p < .001$; ** $p < .01$

terms of empathy and social sensitivity toward twice-exceptional students. In additional analyses, we showed that this trend appeared in all studied countries. However, the participants reported significantly lower awareness of legal acts, instructional strategies, and knowledge on how to proceed with twice-exceptional students. This trend was also shared by the majority of studied countries, except for Turkish teachers, who reported significantly higher awareness than reference point in the domain of knowledge on how to proceed and in knowledge about the instructional strategies. Moreover Bulgarian teachers did not differ from the mid-point in terms of knowledge of how to proceed with twice-exceptional students.

Correlation analysis indicated that teachers' awareness of special skills required in work with twice exceptional students was positively correlated with awareness of their problems and learning difficulties. Only self-efficacy in terms of instructional strategies was positively correlated with teachers' awareness about twice-exceptional students' needs and problems. Knowledge of how to proceed with twice-exceptional students and understanding legal regulations were not correlated with awareness of twice-exceptional students' needs and problems.

Deviations from mid-point between countries

We conducted one-sample t-tests to compare country mean value with the mid-point of the response scale as reference point. The results are summarized in Figure 1. Because of multiple comparisons, we set $p < .001$ to detect significant difference. For all countries, awareness of special needs, learning difficulties, and problems of twice exceptional student were significantly above the mid-point. With regards to the self-efficacy, only Turkish teachers reported significantly higher awareness than reference point in domain of knowledge how to proceed and in knowledge about the instructional strategies.



Fig. 1. The results of all t-test are given in the Supplementary materials

Bulgarian teachers did not differ from the mid-point in terms of knowledge how to proceed. Other countries, in all dimensions showed significantly low awareness when compared to mid-point.

Cultural differences in empathy and social skills

We run MANOVA separately for two sets of dependent variables: empathy and social sensitivity and self-efficacy, using country as a between-subject factor. Age and gender were controlled in case of variables which showed positive correlation with dependent variables (gender correlated significantly with knowledge about legal regulations, $r = .10$; $p = .001$, and knowledge about instructional strategies, $r = .11$; $p < .001$, whereas age correlated with awareness that talented students could also have learning disabilities, $r = -.08$; $p = .01$, and with awareness that student could be both gifted and in need of a special education, $r = -.11$; $p < .001$), but positively with knowledge about knowledge how to proceed with twice-exceptional students, $r = .10$; $p = .001$, and legal regulations, $r = .16$; $p < .001$).

Regarding empathy and social sensitivity, MANOVA indicated a significant effect of country (Wilk's $\lambda = .91$; $F = 6.16$; $p < .001$; Tab. 3). Significant differences regarded the belief that being the teacher of a twice-exceptional student requires different skills or competences ($F_{\text{Brown-Forsythe}} = 7.44$; $p < .001$; $\eta^2 = .03$). Italian teachers had lower belief that a teacher of a twice-exceptional student needs different skill compared to Bulgarian teachers ($t = 3.11$; $p_{\text{Tukey}} = .02$), Polish teachers ($t = 3.40$; $p_{\text{Tukey}} < .01$), and Turkish teachers ($t = 5.00$; $p_{\text{Tukey}} < .001$). Teachers from different countries differed in awareness that gifted student could also have learning difficulties ($F_{\text{Brown-Forsythe}} = 9.93$; $p < .001$; $\eta^2 = .04$). Age effect was non-significant ($F = 0.17$; $p = 0.69$). Bulgarian teachers had lower awareness compared to Turkish teachers ($t = -3.96$; $p_{\text{Tukey}} < .001$). Italian teachers demonstrated lower awareness compared to Czech teachers ($t = 3.19$; $p_{\text{Tukey}} = .01$), Polish teachers ($t = 3.82$; $p_{\text{Tukey}} = .001$), and Turkish teachers ($t = 5.18$; $p_{\text{Tukey}} < .001$). Teachers differed in a belief that students could be both gifted and in need of special education ($F = 14.27$; $p < .001$; $\eta^2 = .05$). Bulgarian teachers had lower awareness compared to Polish teachers ($t = -4.22$; $p_{\text{Tukey}} < .001$), and Turkish teachers ($t = -3.17$; $p_{\text{Tukey}} = .01$), whereas Italian teachers had lower awareness compared to Czech ($t = 3.23$; $p_{\text{Tukey}} = .01$), Polish teachers ($t = 6.77$; $p_{\text{Tukey}} < .001$), and Turkish teachers ($t = 5.91$; $p_{\text{Tukey}} < .001$). Finally, awareness of social and emotional problems which twice-exceptional students may struggle with differed between teachers from studied countries ($F_{\text{Brown-Forsythe}} = 5.90$; $p < .001$; $\eta^2 = .04$). Bulgarian teachers reported lower awareness of these problems compared to Polish teachers ($t = -3.14$; $p_{\text{Tukey}} = .02$), and Turkish teach-

ers ($t = -4.12$; $p_{\text{Tukey}} < .001$). Czech teachers reported lower awareness compared to Polish teachers ($t = -3.15$; $p_{\text{Tukey}} = .02$), and Turkish teachers ($t = -3.76$; $p_{\text{Tukey}} = .002$). Italian teachers reported lower awareness compared to Polish teachers ($t = 3.72$; $p_{\text{Tukey}} = .002$), and Turkish teachers ($t = 4.71$; $p_{\text{Tukey}} < .001$).

Table 3

Means, standard deviations, and ANOVA results for the indicators of empathy and sensitivity

Variable	Bulgaria	Czech	Italy	Poland	Turkey	<i>F</i>	η^2
Skills required	4.18 (0.91)	4.04 (0.70)	3.93 (0.66)	4.20 (0.78)	4.31 (0.99)	6.80	0.03
Awareness of learning difficulties	4.17 (0.76)	4.42 (0.58)	4.08 (0.83)	4.37 (0.75)	4.44 (0.84)	9.93	0.04
Awareness of special needs	4.19 (0.86)	4.35 (0.68)	3.99 (0.80)	4.52 (0.69)	4.42 (0.92)	14.27	0.05
Awareness of social problems	4.30 (0.60)	4.21 (0.65)	4.26 (0.53)	4.50 (0.73)	4.54 (0.77)	5.90	0.04

Cultural differences in self-efficacy

The second set of variables regarded awareness of legal regulations, knowledge and awareness of instructional strategies with twice exceptional students. The MANOVA indicated a significant effect of country (Wilk's $\lambda = .61$; $F = 45.39$; $p < .001$; Tab. 4). We noticed large effect of country with regards to knowledge about how to proceed when one considers a student as twice-exceptional ($F_{\text{Brown-Forsythe}} = 99.50$; $p < .001$; $\eta^2 = .27$). Age was significantly associated with knowledge ($F = 4.35$; $p = .04$; $\eta^2 = .003$); however, the main effect of country was still significant. Bulgarian teachers reported higher knowledge than Czech ($t = 7.55$; $p_{\text{Tukey}} < .001$), Polish ($t = 8.86$; $p_{\text{Tukey}} < .001$), and Italian teachers ($t = 14.50$; $p_{\text{Tukey}} < .001$). Turkish teachers reported higher knowledge compared to Czech teachers ($t = -8.53$; $p_{\text{Tukey}} < .001$), Polish teachers ($t = -10.51$; $p_{\text{Tukey}} < .001$), and Italian teachers ($t = 16.46$; $p_{\text{Tukey}} < .001$). Polish teachers reported higher knowledge compared to Italian teachers ($t = 5.59$; $p_{\text{Tukey}} < .001$). Awareness of legal regulations also differed across studied countries ($F_{\text{Brown-Forsythe}} = 58.53$; $p < .001$; $\eta^2 = .19$). Gender did not significantly moderate this association ($F = 2.39$; $p = .05$; $\eta^2 = .009$), and the main effect of country remained stable after controlling for age ($F = 1.22$; $p = .27$; $\eta^2 = .001$). Polish teachers reported lower awareness of legal regulations compared to

Bulgarian ($t = 9.51$; $p_{\text{Tukey}} < .001$), and Turkish teachers ($t = -12.61$; $p_{\text{Tukey}} < .001$). Italian teachers had lower legal awareness compared to Bulgarian ($t = 7.92$; $p_{\text{Tukey}} < .001$), and Turkish teachers ($t = 10.91$; $p_{\text{Tukey}} < .001$). Czech teachers reported lower awareness compared to Bulgarian ($t = 4.51$; $p_{\text{Tukey}} < .001$), and Turkish teachers ($t = -6.37$; $p_{\text{Tukey}} < .001$). Knowledge about instructional strategies significantly differed across the studied countries ($F_{\text{Brown-Forsythe}} = 92.39$; $p < .001$; $\eta^2 = .26$). Gender did not moderate this association ($F = 1.20$; $p = .31$; $\eta^2 = .004$). Bulgarian teachers reported higher knowledge compared to Czech ($t = 3.16$; $p_{\text{Tukey}} = .01$), Polish ($t = 4.58$; $p_{\text{Tukey}} < .001$), and Italian teachers ($t = 9.83$; $p_{\text{Tukey}} < .001$), but lower than Turkish teachers ($t = -7.66$; $p_{\text{Tukey}} < .001$). Czech teachers reported higher knowledge compared to Italian teachers ($t = 3.75$; $p_{\text{Tukey}} = .002$), but lower than Turkish teachers ($t = -8.41$; $p_{\text{Tukey}} < .001$). Polish teachers had lower knowledge compared to Turkish ($t = -12.38$; $p_{\text{Tukey}} < .001$), but higher than Italian teachers ($t = 5.20$; $p_{\text{Tukey}} < .001$). Italian teachers reported less knowledge than Turkish teachers ($t = 17.89$; $p_{\text{Tukey}} < .001$).

Table 4

Means, standard deviations, and ANOVA results
for the variables regarding self-efficacy

Variable	Bulgaria	Czech	Italy	Poland	Turkey	<i>F</i>	η^2
Knowledge how to proceed	3.10 (0.98)	2.21 (0.75)	1.89 (0.65)	2.36 (0.88)	3.19 (0.94)	99.50	0.27
Legal regulations	2.75 (1.04)	2.18 (0.95)	2.04 (0.74)	1.90 (0.90)	2.97 (1.02)	58.53	0.19
Instructional strategies	2.74 (0.98)	2.35 (0.89)	1.87 (0.67)	2.34 (0.99)	3.38 (1.01)	92.39	0.26

Discussion

The present study showed that the teachers had a high awareness of the specific needs of twice-exceptional students. They reported a mean score of awareness significantly higher compared to a reference point indicating indecision. These results differ from those obtained by other researchers in this field, which showed that the phenomenon of twice-exceptionality among teachers is little known and understood. In previous studies, only about half of teachers could correctly define twice-exceptionality (Firat & Bildiren, 2022; Sakar & Koksall, 2021). Teachers surveyed by Reider-Lewis (2021, p. 194) believed that such students were 'lazy'. Knowledge of the phenomenon of exceptionality largely determines the teacher's experience in dealing with this

group of students, the effectiveness of their support (Sakar & Baloglu, 2025) and recognition (Foley-Nicpon & Cederberg, 2021). Teachers lack knowledge regarding a discrepancy between the cognitive abilities and emotional development among 2E students (Abraham, 2025), can lead to difficulties in interpersonal relationships and thus contribute to negative school experiences for students (Rubenstein et al., 2015).

Teachers showed a lower level of awareness regarding legal regulations and educational strategies toward twice-exceptional students. These results indicated that teachers had an awareness of the phenomenon of twice-exceptional students; however, they lacked knowledge regarding how to professionally address their needs. Despite the increased awareness of the 2E phenomenon, the lack of tools for assessing or diagnosing students and the lack of specialised training for teachers in this area remain a challenge (İlhan-Emecan et al., 2024). Novice teachers, in particular, feel inadequate when working with this group of students (Rowan & Townend, 2016). In our research, age correlated negatively with the awareness that gifted students can also have learning difficulties and with the awareness that a student can be both gifted and need special education, but positively with the awareness of how to deal with twice-exceptional students and legal regulations, which may suggest the need for different forms of support for older and younger teachers.

When accounting for the country, teachers from Bulgaria, the Czech Republic, Italy, Poland, and Turkey reported high awareness of twice-exceptional students' specific needs and problems. Thus, the level of awareness is relatively high, irrespective of the cultural context of the studied countries. However, regarding legal regulations and educational strategies, teachers from almost all countries reported significantly lower awareness. In the domain of educational strategies and legal regulations, it may be equivalent to being unaware of such regulations and strategies or lacking them in a given country. Only in Turkey, teachers were aware of some educational strategies which could be used with twice-exceptional students, which may be related to the fact that in the last few years, interest in the phenomenon of twice-exceptionality has increased among both researchers and practitioners (İlhan Emecan & Şentürk, 2024).

Regarding legal regulations in Turkey and knowledge of how to proceed with twice-exceptional students in Bulgaria, teachers reported difficulties. However, in all other cases, teachers reported clearly lower levels of awareness. Thus, they reported that they did not know how to proceed or which instructional strategies they could use with twice-exceptional students. They also reported not knowing legal regulations. The result is worrying because research shows that teachers who lack the skills to identify such students and the resources to work with them daily tend to focus more intensively on the

deficits and difficulties than on the talents of the students (Němcová, 2019). According to Cybis et al. (2013), 2E students often face difficulties in achieving results corresponding to their abilities due to deficits. They usually benefit from therapeutic or compensatory programs and are less often included in classes or programmes for gifted students.

We detected some differences between countries regarding the level of awareness. Teachers from Turkey, Poland, and Bulgaria reported higher awareness than teachers from the Czech Republic and Italy. However, Polish teachers reported a lower level of awareness of legal regulations compared to other countries. Czech teachers reported lower awareness regarding the required special skills when working with twice-exceptional students. These results should be interpreted in light of the abovementioned general awareness of the special needs of twice-exceptional students and the general pattern of low awareness of legal regulations and educational strategies regarding twice-exceptional students (Antony et al., 2021)

Limitations

The present study is one of the first that investigated teachers' awareness of 2E students and educational strategies toward them and allowed an initial cross-country comparison. However, the limitation of the study is the unequal number of participants across studied countries and lack of established measurement invariance for the items used (Borsboom, 2006). Future studies should delve more into the similarity of understanding the phenomenon of 2E in different educational cultures, for example using content analysis to ensure the comparability across countries.

Conclusions

These results highlight the need for further policy development and targeted teacher training to provide twice-exceptional students with the individualised support necessary for their academic and socio-emotional development. Establishing clear legal frameworks that explicitly recognise 2E students within special education and gifted education policies is essential to ensure adequate support.

Authors contributions

Author Contribution Conceptualization, S.S., M.G., D.D., B.I.E., methodology, S.S., M.G., D.D., B.I.E., M.M., formal analysis, M.M.; data curation, S.S.,

M.G., D.D., B.I.E., D.B., F.G., I.K., K.Š.S., S.O., L.K; writing—original draft preparation, M.G., D.D., M.M. S.S., B.I.E, writing—review and editing, S.S., B.I.E., F.G., I.K., K.Š.S., L.K. M.M., S.O., M.G., D.D.; software, M.M.; project administration, S.S. All authors have read and agreed to the published version of the manuscript.

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