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How the Covid-19 Pandemic was Experienced by Slovenian and German Adolescents with Specific Learning Difficulties

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The spring phase of the pandemic made the education of adolescents with specific learning difficulties (SpLD) challenging. In the present study, which included 122 adolescents with SpLD (50% from Slovenia, 50% from Germany), we investigated how Slovenian and German adolescents with SpLD perceived and solved some of the challenges of distance learning. The study data were collected with two online questionnaires (in Slovenian and German, respectively). Slovenian adolescents were statistically significantly more likely than German adolescents to mention problems with attention, the importance of multisensory learning, and the importance of being able to choose the time to learn, as well as psychosomatic problems. Slovenian adolescents had more experiences with praise from teachers during the pandemic and they also mentioned more issues with the transition to distance learning and the use of information and communication technology. Younger adolescents had more parental help. Male adolescents were more likely to report that they did not have the right spatial conditions for learning. German adolescents spent more time chatting on social media and experienced less support for learning. Female adolescents were more likely to express fear of the pandemic and a lack of learning support, while male adolescents across the sample missed their peers more. Most of the respondents came from families in which the pandemic did not cause serious material and spatial problems, but German adolescents were statistically significantly less likely to feel these consequences. According to the respondents, the spatial and material conditions were similar in both countries.

Keywords: adolescents, Covid-19, distance learning, pandemic, specific learning difficulties

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Kako so pandemijo covida-19 doživljali slovenski in nemški mladostniki s specifičnimi učnimi težavami

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V spomladanski fazi pandemije je bilo izobraževanje mladostnikov s specifičnimi učnimi težavami (SUT) zahtevno. V raziskavi, v kateri je sodelovalo 122 mladostnikov s SUT (50 % iz Slovenije, 50 % iz Nemčije), smo ugotavljali, kako slovenski in nemški mladostniki s SUT zaznavajo in rešujejo nekatere izzive učenja na daljavo. Raziskovalne podatke smo zbrali z dvema spletnima vprašalnikoma (v slovenskem oziroma nemškem jeziku). Slovenski mladostniki so statistično značilno pogosteje kot nemški navajali težave s pozornostjo, pomen multisenzornega učenja in možnosti izbire časa za učenje ter psihosomatske težave. Slovenski mladostniki so imeli več izkušenj s pohvalami učiteljev med pandemijo, omenjali pa so tudi več težav s prehodom na učenje na daljavo in uporabo informacijsko-komunikacijske tehnologije. Mlajši mladostniki so imeli več pomoči staršev. Mladostniki moškega spola so pogosteje poročali, da niso imeli ustreznih prostorskih pogojev za učenje. Nemški mladostniki so več časa preživeli ob klepetu na družbenih omrežjih in doživeli manj podpore pri učenju. Mladostnice so pogosteje izražale strah pred pandemijo in pomanjkanje podpore pri učenju, medtem ko so mladostniki v celotnem vzorcu bolj pogrešali vrstnike. Večina anketirancev je prihajala iz družin, v katerih pandemija ni povzročala resnih materialnih in prostorskih težav, vendar so nemški mladostniki statistično značilno redkeje občutili te posledice. Po mnenju anketirancev so bili prostorski in materialni pogoji v obeh državah podobni.

Ključne besede: mladostniki, covid-19, učenje na daljavo, pandemija, specifične učne težave

Introduction

The transition of education from the classroom to the home environment during the Covid-19 pandemic in 2020 brought many changes that we could not even have imagined in the past (Bubb et al., 2020). In Germany, distance learning was a significant challenge for students, teachers and parents, as attempts to continue distance learning as smoothly as possible with digital tools failed (Blume, 2020). German students were inadequately trained for distance learning, had insufficient information and communication technology (ICT), and did not all have equal access to distance learning. Distance learning revealed inequalities between students who had digital tools and those who did not. Although 90% of German adolescents own a smartphone (the proportion of younger adolescents with a smartphone ranges from 25% to 67%), this does not mean that they are proficient in ICT for distance learning, as they mainly used technology for leisure activities before the pandemic (Feierabend et al., 2018 cited in Blume, 2020). In addition, almost 10% of people in Germany did not have internet access (not only due to wealth, but as a result of inadequate infrastructure) (Blume, 2020). Most German teachers had low levels of ICT skills. Teachers complained that students were not proficient in using email (attaching documents, replying to emails), while parents complained that teachers required and used too many different tools and environments in distance learning, and employed materials that were merely digital versions of traditional worksheets adapted to the current situation (Koller et al., 2020 cited in Blume, 2020), thus creating a number of obstacles for students (Ibid.). Slovenian students faced similar challenges. In spring, there were almost 2,000 students without computers, some of whom still do not have sufficient internet access. Moreover, a large proportion of students did not have adequate computer skills for distance learning, as computer science is not a compulsory subject in primary school (Šprohar, 2020). Only 20% of teachers were very well trained for distance learning (Kuralt, 2020).

Slovenian and German adolescents aged 10 to 18 also participated in a comparative EU survey on distance learning in spring 2020, covering eleven countries (Vuorikari et al., 2020). The survey data (ibid.) show that both groups of adolescents devoted an average of 34–41% of the total time spent online to learning activities. Some 63% of the Slovenian adolescents surveyed perceived distance learning as more stressful than classroom learning, while 30–45% of the German adolescents perceived it as equally stressful to classroom learning. Of the 5.9 hours spent online, German adolescents engaged in 3.3 hours of school-related activities, while Slovenian adolescents devoted 3.8 hours of

the 6.7 hours spent online to school-related activities. In contact with teachers, videoconferencing tools were used by 60% of German adolescents and 94% of Slovenian adolescents. German adolescents and parents were more concerned about the negative effects of distance learning than Slovenian parents and adolescents. More than 75% of German parents had at least basic or more than basic skills in using ICT technology, compared to 68% of Slovenian parents. The financial situation of the participating German parents was better than that of the Slovenian parents. Based on all of the results, the authors suggested improving the ICT equipment of schools, training teachers in the use of ICT, developing a positive attitude towards the use of ICT, reducing the burden on parents, and finding new models of distance learning (Vuorikari et al., 2020).

In the international survey PISA 2018 (OECD, 2019), Germany and Slovenia are above the OECD average of 79 countries in all three forms of literacy, which shows that the learning performance of students with and without disabilities from both countries is similar at the international level. The results of our survey are therefore comparable between the two countries. German 15-year-olds scored higher in reading, while Slovenian 15-year-olds scored higher in mathematics and science. In science, less than 15% of Slovenian students scored below the second level. In mathematics and reading literacy, the performance of Slovenian adolescents was close to the second level limit. The proportion of German students scoring below the second level was slightly higher in all three forms of literacy. German 15-year-olds are more satisfied with their lives (67%) than Slovenian 15-year-olds (64%), and 92% of German 15-year-olds feel happy sometimes or always. In comparison, 65% of Slovenian 15-year-olds are equally happy, but 30% of Slovenian adolescents are always sad compared to only 4% of German adolescents (OECD, 2019).

Based on an analysis of the literature and data from Slovenian adolescents in PISA 2018, Markelj and Sember (2020) find that emotional support from parents is extremely important for adolescents' feelings of life satisfaction. The greatest predictors of life satisfaction in the school environment for Slovenian adolescents are a sense of greater belonging to the school, a lower perception and experience of violence, support from teachers during lessons, precise guidelines for work, and formative feedback. Boys are significantly more satisfied with life than girls; this difference among Slovenian participants is one of the largest in the participating countries of PISA 2018 (Markelj & Sember, 2020).

Di Pietro et al. (2020) point out the multiple effects of the pandemic on school-age youth. Academic performance declined because students spent less time studying in distance learning than in school and experienced more stress and anxiety, which negatively impacted academic performance. Lacking

face-to-face contact with peers and teachers, students were less motivated and less engaged in their schoolwork. The lack of social contact with peers and teachers will have far-reaching socio-emotional consequences for individuals' behaviour and mental health. The impact of these factors on adolescents from families with lower socioeconomic status is even more significant, as they have more inadequate material conditions and less help and support from their parents (Di Pietro et al., 2020).

In a large comparative study of the performance of 8,000 third- to eighth-grade students in 2019, Kuhfeld et al. (2020) found that distance education had a significantly greater negative impact on mathematics performance than on reading performance. Students had significantly smaller achievement gaps in reading than in mathematics. The researchers hypothesised that reading performance was better because students read more independently and because parents found it easier to help children with reading difficulties than those who struggled with mathematics. In mathematics, on the other hand, the results were concerning because students scored 5–10 percentile lower in the spring of 2020 than they did in 2019 (Kuhfeld et al., 2020).

For parents, distance learning presents a great challenge, as the new role has given them many new responsibilities (Horowitz & Igielnik, 2020), which are assumed to be even more extensive and demanding when working with adolescents with severe specific learning difficulties (SpLD), who have diverse special needs. These students often do not have the necessary skills to use ICT; they need structure, more help and support because it is more difficult for them to concentrate on the required tasks for an extended period of time. For adolescents with SpLD who are sufficiently computer literate, however, the use of ICT reduces the impact of learning deficits and enables them to better adjust their pace and way of working.

Individuals with a more severe form of SpLD[5] are those who, due to known or unknown disorders or differences in brain function, have difficulties in reading, writing, spelling and/or arithmetic, despite having average or above-average intellectual abilities (in Germany, with an IQ above 70). In the learning environment, they have special needs in terms of organisation, motor skills, social integration and education (Lewis & Doorlang, 1987 cited in Kavkler, 2011). Educational needs resulting from impaired psychological processes such as attention,

5 The term "Specific Learning Difficulty" (SpLD) refers to a difference or difficulty in certain aspects of learning. The most common SpLDs are dyslexia, dyspraxia, dyscalculia, dysgraphia and attention deficit/ hyperactivity disorder (ADHD). A person may have one of these disorders independently, or they may coexist as part of a broader profile. SpLDs exist on a continuum from mild to moderate to severe. There are common patterns of behaviour and ability, but in each person there are a range of different patterns of effect (BDA – British Dyslexia Association, n. d.; Helen Arkell Dyslexia Centre, n. d.; The Dyslexia Association, n. d.).

memory, language processing, social cognition, perception, coordination, temporal and spatial orientation, and information organisation have the most significant impact on the academic performance and inclusion of adolescents with SpLD (Magajna et al., 2014). These impairments are present to such an extent that there are very significant differences between the adolescent's actual abilities, on the one hand, and the quality and quantity of knowledge representation, on the other (Thomson, 2007). The disruption of these psychological processes also conditions the special needs of adolescents with SpLD in the area of work organisation and planning (weaker organisational skills), as well as in the motor and socio-emotional areas. Due to their poorer social integration skills, they have difficulties integrating into the social environment, as it is more difficult for them to understand rules, social relationships, non-verbal signs of social messages, etc. Adolescents with SpLD often suffer from emotional distress and problems with poor learning performance (Lithari, 2019; Long et al., 2007; Mikuš Kos, 2017), loss of self-confidence and lowered self-esteem, sensitivity to criticism and alienation from peers (Ott, 1997; O'Brien, 2020), as well as the frustration, shame and depression that can result from not recognising the problems or not receiving adequate support (Mikuš Kos, 2017). In adolescents, SpLDs are often associated with an ADHD disorder. As neurologically based disorders, SpLD and ADHD impair the effectiveness of reading, writing, mathematics, organisation, listening comprehension, social skills, motor skills or a combination thereof (Horowitz et al., 2017). The co-occurrence of SpLD and ADHD has the effect of increasing the special needs of children and adolescents. In the United States, this co-occurrence is present in one in five children and adolescents (Horowitz et al., 2017).

In the general population, the estimated prevalence rate of school-aged adolescents with SpLD is 5–15% (APA, 2013). In Germany and Slovenia, there are no exact statistics on the number of students with SpLD. For Slovenia, the only data available is that 3% of students in primary schools (MIZŠ, 2020a) and 3.75% of students in secondary schools have severe SpLD (MIZŠ, 2020b). In Slovenia, adolescents with severe SpLD are defined as children with special needs (Magajna et al., 2014). The systems of treatment and interventions for students with SpLD also differ in the two countries. In both Germany and Slovenia, there are no representative surveys of the performance of students with SpLD, but in both countries they are often among those who perform lower on average than their peers without SpLD. Most students with severe SpLD need a lot of social and emotional support, understanding of their needs and time for adjustments in order to show their abilities and knowledge.

Since many adolescents with SpLD were found by NCLD (2020) to lack sufficient access to quality individualised instruction and additional

professional support, adequate parental support, appropriate ICT and other material conditions during the pandemic, they experienced even greater social and emotional distress than they would have otherwise and more than peers. Anxiety and social isolation presented a barrier that further impacted learning concentration, which will have a long-term impact on the educational success of these students (NCLD, 2020). The impact of these factors will be mitigated if teachers provide them with the necessary integrated socio-emotional and educational support, taking into account their strengths (NCLD, 2020). Students will need to be involved in the preparation and implementation of activities to overcome the consequences of Covid-19, so that change is inclusive and focused on children and adolescents to empower them to make the necessary changes (Cuevas-Parra & Stephano, 2020).

Garcia and Weiss (2020) point out that while we cannot predict exactly how the pandemic will affect the needs of the school population and its educational attainment in the future, we can conclude from existing research that the consequences will be far-reaching for all and especially for at-risk groups. Therefore, after the return to schools, the school system should be redesigned to reduce the negative socio-emotional and educational consequences of the pandemic and to restore the quality of education for all students.

Research Problem and Research Questions

After the distance learning experience in spring, we asked Slovenian and German adolescents with SpLD about how the Covid-19 pandemic had changed their lives and affected their plans. We were interested in whether they felt lonely, whether this period was stressful for them, what their learning needs were, and how the home and school environment met their needs.

The main aim of the study was to identify differences between adolescents with SpLD by country, age group and gender. In this paper, we present only part of the data from a broader study; specifically, the part concerning perceptions of the impact of distance learning on adolescents with SpLD. We focus on adolescents' self-perceptions and perceptions of educational needs, as well as on the impact of the pandemic and thus of distance learning in the emotional, social and educational domains, and on material and spatial conditions at home.

According to the research problem, the following research questions were formed:

RQ1: What are the differences in the self-perceptions and perceptions of the educational needs of adolescents by country, age group and gender?

RQ2: What are the differences in experiencing the consequences of the pandemic in the emotional and social domain by country, age group and gender?
RQ3: What are the differences in experiencing the consequences of the pandemic in education by country, age group and gender?
RQ4: How do material and spatial conditions during the pandemic differ by country, age group and gender?

Method

Participants

A total of 122 (100%) adolescents participated in the study, 61 (50%) were from Slovenia and 61 (50%) from Germany. The sample included 49 (40.2%) male adolescents (33 (27.0%) from Slovenia and 16 (13.2%) from Germany) and 73 (59.8%) female adolescents (28 (23.0%) from Slovenia and 45 (36.8%) from Germany). The adolescents were divided into two age groups. In the age group from 12 to 14 years there were 67 (55.3%) adolescents in the sample (34 (28.1%) from Slovenia and 33 (27.2%) from Germany), and in the age group from 15 to 18 years there were 54 (44.7%) adolescents (26 (21.5%) from Slovenia and 28 (23.2%) from Germany). One person from Slovenia did not provide information on his age. Below, the sample is presented according to the type of SpLD present among the adolescents (multiple answers were possible).

Table 1
Description of the sample by type of SpLD

	Reading difficulties	Writing difficulties	Arithmetic difficulties	Attention difficulties	Problems with the organisation of learning	Combined difficulties	Other
Yes (f)	37	31	76	51	36	24	8
Yes (%)	30.3%	25.4%	62.3%	41.8%	29.5%	19.7%	6.6%
No (f)	85	91	46	71	86	98	114
No (%)	69.7%	74.6%	37.7%	58.2%	70.5%	80.3%	93.4%
Total (f)	122	122	122	122	122	122	122
Total (%)	100%	100%	100%	100%	100%	100%	100%

Table 1 shows that the majority (62.3%) of the adolescents included in the study have arithmetic difficulties, and the fewest (6.6%) have other difficulties, such as Asperger's syndrome, dyslexia, foreign language difficulties, autism or ADHD. Three respondents ticked the item Other but did not specify the nature of the problem.

Instruments

The data were collected using the same online questionnaire[6] in two language versions: Slovenian and German. The questionnaire contained twelve questions, but according to the content of the present article we will only focus on seven questions: three questions provided basic information about the respondents (gender, age and type of deficits identified through a formal diagnostic procedure), while the other four questions related to the adolescent's self-perceptions and perceptions of their educational needs, the consequences of the pandemic in the emotional, social and educational domains, and the material and spatial conditions. Each of the latter four questions contained multiple items. For each item, the adolescents indicated the extent to which the item was valid to them, or the extent to which they agreed with it, on a four-point scale (e.g., 1 – not valid at all/ strongly disagree, 2 – mostly not valid/disagree, 3 – mostly valid/agree and 4 – always valid/strongly agree).

Research Design

Adolescents with SpLD were invited to complete the questionnaire via parents and professionals involved in the Bravo Association[7] from Ljubljana. The questionnaire was accessed via a web link. Initially, the questionnaire was completed by Slovenian adolescents with SpLD, and a little later we included adolescents from the German Institute for students with SpLD[8] from Leipzig, led by Dr Sven Lychatz. The German adolescents with SpLD completed a German version of the same online questionnaire. The Slovenian adolescents completed the questionnaire from 1 September to 1 November 2020, and the German adolescents completed it from 20 September to 1 November 2020. Participation was voluntary and anonymous.

The collected data are presented with frequencies (f) and proportions (%), and the Mann-Whitney U test (U) and Spearman correlation coefficient (ρ) are also used. Only the results that are statistically significant are presented.

Results

The results of the research will be presented in four groups: (1) self-perceptions and perceptions of the educational needs of adolescents (problems with attention, learning performance and emotional factors), (2) consequences

6 Prior to online publication, the linguistic and reading complexity of the questionnaire was reviewed by experts in specific learning difficulties, and it was piloted by some adolescents with SpLD.

7 Bravo Association – Association for Helping Children and Adolescents with SpLD, Ljubljana.

8 Institute for Systemic-Integrative Learning Therapy, Leipzig.

of the pandemic in the emotional and social domain, (3) consequences of the pandemic in education, and (4) material and spatial conditions at home.

Statistically significant differences between countries and some statistically significant correlations between individual items in each country are presented below in each section. Statistically significant differences by gender and age are also presented.

Self-perceptions and perceptions of the educational needs of adolescents

Table 2

Mann-Whitney U test to determine differences between countries in the items related to self-perceptions and perceptions of the educational needs of adolescents

	Item	Country	*N*	*R*	*U*	*z*	*p*
I1	I find it difficult to concentrate on schoolwork.	Slovenia	61	70.34	1321.000	-2.976	**.003**
		Germany	61	52.66			
I2	While sitting, I cannot sit still on a chair.	Slovenia	61	**70.92**	1286.000	-3.052	**.002**
		Germany	61	52.08			
I3	My parents constantly force me to work for school.	Slovenia	61	**73.43**	1132.500	-3.908	**.000**
		Germany	61	49.57			
I4	I need more breaks to do my schoolwork.	Slovenia	61	**74.43**	1072.000	-4.227	**.000**
		Germany	61	48.57			
I5	I prefer to learn much more when the teacher praises me for a job well done.	Slovenia	61	**75.16**	1027.000	-4.494	**.000**
		Germany	61	47.84			
I6	I learn more when pictures are added to the text.	Slovenia	61	**79.66**	753.000	-5.890	**.000**
		Germany	61	43.34			
I7	I learn more when I listen to subject content (teacher's explanation, someone reads to me, I listen to recordings of the explanation, etc.).	Slovenia	61	**78.86**	801.500	-5.722	**.000**
		Germany	61	44.14			
I8	I like to set my own time for my schoolwork.	Slovenia	61	**69.20**	1391.000	-2.529	**.011**
		Germany	61	53.80			
I9	When I work for school, I often feel distress, my stomach hurts, my head hurts, etc.	Slovenia	61	69.73	1358.500	-2.735	**.006**
		Germany	61	53.27			

Table 2 shows that in the items from I1 to I4, the Slovenian adolescents described problems with attention more statistically significantly.

In the following, the statistically significant correlations between the individual items (items from the domain of attention problems are compared with items from the other domains of the questionnaire) are presented by country. Among the Slovenian adolescents, their difficulty in concentrating on

schoolwork is statistically significantly related to their need for more breaks to complete their schoolwork (ρ = .541; p = .000) and to the belief that parents constantly force them to work for school (ρ = .409; p = .001). The Slovenian adolescents' belief that parents constantly force them to work for school is statistically significantly related to the item that they needed more help from their parents (ρ = .428; p = .001). All correlations are positive and moderate.

Among the Slovenian adolescents, their preference for order in their schoolwork is statistically significantly related to their difficulty in concentrating on schoolwork (ρ = -.465; p = .000) and constant pressure from parents to work for school (ρ = -.505; p = .000). Both correlations are negative and moderate.

For all items from I5 to I8 (Table 2), which refer to the domain of learning success, the Slovenian adolescents rated themselves statistically significantly higher than the German adolescents. Thus, it can be seen that the Slovenian adolescents are more motivated by the teacher's praise, and they perceive the greater importance of multisensory teaching and flexibility in the organisation of time for school obligations. There were statistically significant differences between the two countries on item I9, with the Slovenian adolescents reporting more psychosomatic problems.

In the following, the statistically significant correlations between the individual items (items from the domain of learning success are compared with items from the other domains of the questionnaire) are presented by country. In the German adolescents, the feeling of having psychosomatic problems when working for school is statistically significantly related to the belief that parents constantly force them to work for school (ρ = .273; p = .033). The same item is statistically significantly related to the Slovenian adolescents' belief that they try hard but still do not succeed (ρ = .260; p = .043) and that they need more breaks during school work (ρ = .334; p = .008). All correlations are positive and weak.

Table 3

Mann-Whitney U test to determine age differences between groups in the items related to self-perceptions and perceptions of the educational needs of adolescents

	Item	Group by age	*N*	*R*	*U*	*z*	*p*
I8	I like to set my own time for my schoolwork.	Younger	67	55.37	1432.000	-2.070	**.038**
		Older	54	**67.98**			
I10	I like order in my schoolwork.	Younger	67	54.62	1381.500	-2.402	**.016**
		Older	54	**68.92**			
I11	I need the help of my parents to do schoolwork.	Younger	67	**71.22**	1124.000	-3.746	**.000**
		Older	54	48.31			

In the group of items from the domain of self-perceptions and perceptions of educational needs of adolescents, when statistically significant differences by age are considered (Table 3), it appears that older adolescents statistically significantly prefer to set their time for schoolwork and that they are statistically significantly more likely to like order in their schoolwork than younger adolescents. Younger adolescents are statistically significantly more likely to report needing parental help with schoolwork than older adolescents.

When checking for gender differences within this group of items, we find statistically significant differences in the item that parents constantly force them to work for school (U = 1240.000; z = -3.003; p = .003). Male adolescents (R = 72.69) rated this item statistically significantly higher than female adolescents (R = 53.99). There are also statistically significant differences between genders for the item that they did not often have all of the learning materials (U = 1436.000; z = -1.976; p = .048). This item is rated statistically significantly higher by male adolescents (R = 68.69) than by female adolescents (R = 56.67). Male adolescents (R = 74.46) also rated higher than female adolescents (R = 52.80) on the item that they learn more when they listen to subject content (U = 1153.500; z = -3.499; p = .000). Looking at the differences between genders, statistically significant differences also appear for the item that they like order in their schoolwork (U = 1096.500; z = -3.898; p = .000), with female adolescents (R = 70.98) rating this item statistically significantly higher than male adolescents (R = 47.38).

The consequences of the pandemic in the emotional and social domain

Table 4

Mann-Whitney U test to determine differences between countries in the items related to the consequences of the pandemic in the emotional and social domain

	Item	Country	*N*	*R*	*U*	*z*	*p*
I12	I spent a lot of time alone in my room, playing games, chatting on social networks, etc.	Slovenia	61	53.60	1378.500	-2.563	**.010**
		Germany	61	**69.40**			
I13	I missed talking and playing in person with friends.	Slovenia	61	**77.28**	898.000	-5.126	**.000**
		Germany	61	45.72			

Table 4 shows that there are statistically significant differences between countries when it comes to spending a lot of time alone in one's room (I12), with the German adolescents rating themselves statistically significantly higher than

the Slovenian adolescents. The Slovenian adolescents miss talking and playing in person with friends (I13), rating themselves statistically significantly higher than the German adolescents on this item.

Table 5

Mann-Whitney U test to determine age differences between groups in the items related to the consequences of the pandemic in the emotional and social domain

	Item	Group by age	*N*	*R*	*U*	*z*	*p*
I12	I spent a lot of time alone in my room, playing games, chatting on social networks, etc.	Younger	67	55.07	1411.500	-2.153	**.031**
		Older	54	**68.36**			
I14	Sometimes I got afraid of quarantine or the consequences of Covid-19 and had a feeling of suffocation.	Younger	67	54.60	1380.500	-2.429	**.015**
		Older	54	**68.94**			

Table 5 shows that there are statistically significant differences between age groups. It can be seen that older adolescents spent more time alone in their room, playing games and chatting on social media, and reported that they were more likely to be afraid of quarantine or the consequences of Covid-19 and had a feeling of suffocation.

Looking at the differences between genders, we find that there are statistically significant differences in the item that they are afraid of quarantine or the consequences of Covid-19 and have a feeling of suffocation (U = 1342.000; z = -2.539; p = .011), with female adolescents (R = 67.62) rating themselves statistically significantly higher on this item than male adolescents (R = 52.39). Male adolescents (R = 70.57) rated themselves higher than female adolescents (R = 55.41) on whether they miss talking and playing with friends in person (U = 1344.000; z = -2.414; p = .016).

The consequences of the pandemic in education

Table 6

Mann-Whitney U test to determine differences between countries in the items related to the consequences of the pandemic in education

	Item	Country	*N*	*R*	*U*	*z*	*p*
I15	I had problems with the transition to distance learning and a different way of working.	Slovenia	61	**67.94**	1467.500	-2.084	**.037**
		Germany	61	55.06			
I16	I had problems managing technical devices and programs (computer, tablet, smartphone, etc.).	Slovenia	61	**73.25**	1143.500	-3.930	**.000**
		Germany	61	49.75			
I17	I received more praise from teachers.	Slovenia	61	**67.66**	1485.000	-1.989	**.047**
		Germany	61	55.34			
I18	On several occasions, I had individual encouragement from teachers (by phone, email, Zoom, MS Teams, etc.) to do schoolwork.	Slovenia	61	**71.75**	1235.000	-3.347	**.001**
		Germany	61	51.25			
I19	I was often in great distress because I could not solve the tasks, but I had no help.	Slovenia	61	52.30	1299.500	-3.000	**.003**
		Germany	61	**70.70**			

From Table 6, it can be seen that there are statistically significant differences between the two countries on the above items. For all of the items except the item that they were often in great distress because they could not solve the tasks but had no help (I19), the Slovenian adolescents rated themselves statistically significantly higher than the Germans, but for item I19 the German adolescents rated themselves statistically significantly higher.

In the following, the statistically significant correlations between the individual items (items from the domain of consequences of the pandemic in education are compared with items from the other domains of the questionnaire) are presented by country. For the Slovenian adolescents, problems with the transition to distance learning and a different way of working were statistically significantly related to their problems with using technical devices and programs (ρ = 0.394; p = .002), too little feedback from the teacher about their learning performance (ρ = 0.378; p = .003), and a lack of face-to-face conversations and games with friends (ρ = 0.320; p = .012). All correlations are positive and weak.

The adolescents' problems with the transition to distance learning and a different way of working are statistically significantly related to a lower willingness to work for school (ρ = 0.618; p = 0.000) among the Slovenian adolescents,

and to the feeling of often being very desperate because they could not solve the tasks and had no help among both the Slovenian (ρ = .418; p = .001) and the German adolescents (ρ = .383; p = .002). All correlations are positive and weak (.20 < ρ < .40) or moderate (.40 < ρ < .70).

Among the German adolescents, problems managing technical devices and programs are statistically significantly related to poor material conditions for learning when they did not have their own computer, internet, smartphone, etc. (ρ = .282; p = .028). The correlation is positive and weak.

Table 7

Mann-Whitney U test to determine age differences between groups in the items related to the consequences of the pandemic in education

	Item	Group by age	*N*	*R*	*U*	*z*	*p*
I16	I had problems managing technical devices and programs (computer, tablet, smartphone, etc.).	Younger	67	55.00	1407.000	-2.246	**.025**
		Older	54	**68.44**			
I20	I had more parental help.	Younger	67	**68.66**	1296.000	-2.786	**.005**
		Older	54	51.50			
I21	I had several problems with the organisation of learning (schedule, order, timing of obligations etc.).	Younger	67	54.66	1384.500	-2.291	**.022**
		Older	54	**68.86**			
I22	I received too little teacher feedback on learning performance.	Younger	67	54.93	1402.000	-2.194	**.028**
		Older	54	**68.54**			
I23	I had no additional professional help.	Younger	67	55.05	1410.500	-2.150	**.032**
		Older	54	**68.38**			

In determining the differences between younger and older adolescents (Table 7), we find that younger adolescents had statistically significantly more parental help than older adolescents. Older adolescents, on the other hand, rated themselves statistically significantly higher than younger adolescents on all items in Table 7 except item I20.

Examining the differences between genders, we find that there are statistically significant differences on the item that they were often very distressed because they could not solve the tasks and had no help (U = 1382.500; z = -2.214; p = .027), with female adolescents (R = 67.06) rating themselves statistically significantly higher than male adolescents (R = 53.21). There were also statistically significant differences between genders on the item that parents always force them to study (U = 1310.500; z = -2.660; p = .008), with male adolescents

(R = 71.26) rating themselves statistically significantly higher than female adolescents (R = 54.95). Statistically significant differences between genders are also evident in the item about more parental help (U = 1278.500; z = -2.776; p = .006), with male adolescents (R = 71.91) rating themselves statistically significantly higher than female adolescents (R = 54.51). Statistically significant differences between genders are also evident in the item of not having good spatial conditions for learning (U = 1500.000; z = - 2.079; p = .038), with male adolescents (R = 67.39) rating themselves statistically significantly higher than female adolescents (R = 57.55).

Material and spatial conditions at home

Table 8

Mann-Whitney U test to determine differences between countries in the items related to material and spatial conditions at home

	Item	Country	*N*	*R*	*U*	*z*	*p*
I24	I did not feel any financial problems due to the Covid-19 quarantine.	Slovenia	61	54.02	1404.000	-2.450	**.014**
		Germany	61	**68.98**			
I25	I did not have good spatial conditions for learning (I did not have my own corner where I could study, a study room, there was no peace, etc.).	Slovenia	61	61.50	1860.500	.000	1.000
		Germany	61	61.50			
I26	I did not have good material conditions for learning (I did not have my own computer, internet, smartphone, etc.).	Slovenia	61	60.25	1784.500	-.582	.561
		Germany	61	62.75			

In Table 8, we see that there are statistically significant differences between the two countries in I24. The German adolescents rate themselves statistically significantly higher than the Slovenian adolescents when it comes to not feeling any financial problems due to the Covid-19 quarantine. Items I25 and I26 show that there were no statistically significant differences between the two countries in reporting that the adolescents did not have good spatial or material conditions for learning. According to the opinion of the adolescents, the spatial and material conditions were similar in both countries.

In the following, the statistically significant correlations between the individual items (items from the domain of material and spatial conditions at home are compared with items from the other domains of the questionnaire) are presented by country. Among the German adolescents, the belief of not feeling any financial problems due to quarantine is statistically significantly

related to fewer adjustments of texts, explanations, instructions, pace of work by teachers (ρ = .301; p = .018). The correlation is positive and weak.

Discussion and Conclusion

Due to various deficits, adolescents with SpLD belong to the at-risk group of adolescents who might have more pronounced problems in distance learning and social integration compared to their peers. We therefore wanted to investigate the opinions of Slovenian and German adolescents about how they perceive themselves and their educational needs, how they perceive the consequences of distance learning in the educational and socio-emotional domain, and what material and spatial conditions they had at the time of the pandemic. As part of the first research question, we were interested in how Slovenian and German adolescents perceive themselves and their educational needs in general.

Compared to German adolescents, Slovenian adolescents statistically significantly emphasised attention problems, stressed the importance of multisensory learning, the positive impact of the teacher's praise on learning motivation, the positive impact of the possibility of choosing a school schedule, as well as psychosomatic problems. As the co-occurrence of SpLD and ADHD increases the special needs of children and adolescents (Horowitz et al., 2017), their needs may be present to such an extent that we observe very obvious differences between the adolescent's actual abilities, on the one hand, and the quality and quantity of knowledge, on the other (Thomson, 2007). We found that younger adolescents are statistically significantly more likely to need parental help, while older adolescents are statistically significantly more likely to determine their own time for performing school obligations and to have order in school work.

Male adolescents were statistically significantly more likely than females to report that their parents constantly forced them to study, that they often did not have all of the learning materials, and that they learned more when they heard the school materials. Female adolescents were statistically significantly more likely than male adolescents to report that they like order in school work. Our results show that there is a link between German adolescents' psychosomatic problems with SpLD and their parents' constant pressure to work for school. Nusser (2021) found that parents of students with special needs are more likely overall to provide parental support during distance learning, but it remains unclear whether parental support was of good quality and thus effective, or whether it was perhaps insufficient and resulted in increased learning

time for students with SpLD. In Slovenian adolescents, however, there is a significant correlation between psychosomatic problems and feelings of failure despite constant effort and the need for more breaks. Since many adolescents with SpLD did not have sufficient access to quality individualised instruction and additional professional help, adequate parental support, appropriate ICT, and other material conditions during the spring pandemic, they experienced even greater socio-emotional stress than usual and greater than peers (NCLD, 2020).

In the context of the second research question, we were interested in the consequences of the pandemic experienced by adolescents in the emotional and social domain. German adolescents were statistically significantly more likely than Slovenian adolescents to report that they spent a lot of time in their room, playing games and chatting on social networks. Similarly, in a study by Cauberghe et al. (2021), the majority of adolescents reported increased use of social media during lockdown, which proved to be the most useful active coping strategy for self-regulating mood during that time. Social media use mitigated their feelings of distress and anxiety to some extent and increased their feelings of happiness (Cauberghe et al., 2021). Slovenian adolescents, on the other hand, were statistically significantly more likely to miss talking and playing in person with friends than German adolescents. A study by Potrč et al. (2020), conducted on a sample of Slovenian primary and secondary school students with no special educational needs, found that primary school students needed communication during the lockdown, but that secondary school students did not particularly miss communication (Potrč et al., 2020). Female adolescents were statistically significantly more afraid of quarantine and the consequences of Covid-19 and had a feeling of suffocation, while male adolescents were statistically significantly more likely to miss face-to-face conversation and playing with friends. Some research conducted on Covid-19 (cited in Loades et al., 2020) has shown that loneliness is more strongly associated with increased depressive symptoms in girls and increased social anxiety in boys. Similarly, a study by Forte et al. (2021) found that girls over the age of 14 were more likely to experience sadness and boredom and more likely to be anxious. Older adolescents spent statistically significantly more time in their room, playing games and chatting on social media compared to younger adolescents, and were more likely than younger adolescents to report experiencing severe distress due to quarantine and fear of the consequences of Covid-19. Anxiety and social isolation presented a barrier that further impaired learning concentration, which in turn will impact their educational success in the long term (NCLD, 2020). Most people with SpLD need a lot of socio-emotional support, understanding of their needs, and time to adapt in order to show their skills and knowledge.

A lack of social contact with peers and teachers will have far reaching socio-emotional consequences on an individual's behaviour and mental health (Di Pietro et al., 2020; Laslo-Roth et al., 2020; Zhang et al., 2020).

For the third research question, we were interested in how adolescents experienced the consequences of the pandemic in education. Distance learning was stressful and affected the performance of both German and Slovenian adolescents. We find that Slovenian adolescents had statistically significantly more problems with the transition to distance learning and with the use of ICT than German adolescents, which is also evident from EU survey data (Vuorikari et al., 2020). At the same time, Slovenian adolescents received statistically significantly more praise and individual encouragement from teachers than German adolescents. Letzel et al. (2020 cited in Nusser, 2021) find that longer learning times for students with special educational needs are related to teachers not providing appropriate learning materials and tasks for students with different learning profiles, which is also related to our findings.

German adolescents were statistically significantly more likely than Slovenian adolescents to state that they were in great distress because they could not solve their tasks but had no help. There was also an important gender difference in this item, as female adolescents were statistically significantly more likely than male adolescents to report being in great distress because they could not solve their tasks and had no help. Male adolescents, however, were statistically significantly more likely than female adolescents to report that their parents kept forcing them to study, that they had more parental help, but that they did not have good spatial conditions for learning. Younger adolescents had statistically significantly more parental help than older adolescents. However, older adolescents estimated that they had statistically significantly more problems with ICT management and organisation of learning, that they received too little teacher feedback on learning performance, and that they had less additional professional help. We assume that parents and teachers expected older adolescents to be more independent in their work for the school. However, because adolescents did not have personal contact with peers and teachers, they were less motivated and engaged in fulfilling school responsibilities (Di Pietro et al., 2020).

Many studies related to the consequences of the pandemic also emphasise the impact of material and spatial conditions at home on adolescent learning. In the context of the fourth research question, we were interested in the material and spatial conditions at home during the pandemic. The results of our research show that a statistically significantly higher number of German adolescents than Slovenian adolescents stated that they did not feel any financial problems due to the Covid-19 quarantine, which is also in line with the results

of the study by Vuorikari et al. (2020). However, there are no statistically significant differences between the countries in terms of the items on spatial and material conditions for learning, so we can conclude that spatial and material conditions are similar among adolescents in both countries. Poorer material conditions of families affect the material conditions for learning, and indirectly affect the quantity and quality of help and support from parents and the socio-emotional distress of the adolescent (Di Pietro et al., 2020).

Although we cannot predict exactly how the pandemic will affect the needs of school populations and their educational outcomes in the future, we can conclude from existing research that the consequences will be far-reaching for all and especially for at-risk groups (Garcia & Weiss, 2020). Intensive and specific educational and socio-emotional forms of help and support will have to be organised for children and adolescents with SpLD so that they can develop their potential.

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