APPENDIX

RESULTS OF THE 2018 NATIONAL ASSESSMENT OF BASIC COMPETENCES IN HUNGARY – AMONGST 6TH 8TH AND 10TH GRADE PUPILS DIAGNOSED WITH SEN AND BTM DISORDER

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Abstract

One of the aims of the study is to present the results of the 2018 National Assessment of Basic Competences, on a group of pupil, with Integration, Learning and Behavioral Disorder (BTM) and a group of Special Educational Need pupils (SEN). The other important goal of the paper is to analyze the prevalence of children with BTM code itemized by counties. The authors first briefly outline the basic concepts, with detailed definitions published in the 2017 article. Detailed definitions can be found in the 2017 study on the subject. Then, in the 2018 sample, the prevalence rates of BTM subgroups are presented by county. The county breakdown has only partially brought the expected results, as there are differences indeed, but these do not show the expected pattern. We discuss this, as well as strategies to reduce lagging behind children diagnosed with BTM and SEN. Our long-term goal is to launch a series of papers based on the theoretical basis of the present study by analyzing BTM country data. The next study of which is the regional presentation of SNI data and then the ADHD data. The authors of the study carried out the research on the basis of the National Assessment of Basic Competences Research Group with the topic number 20642B800, funded by the Faculty of Humanities and Social Sciences, Károli Gáspár University of the Reformed Church in Hungary. As an appendix to our study, we also publish our dissertation in English.

Keywords: Special Educational Need ■ ADHD ■ Dyslexia ■ Integration ■ Learning and Behavioral disorder

INTRODUCTION PREAMBLE

One of the aims of this study is to analyze the results of a group of students with special needs education (SEN) and special needs education (SEN) within the 2018 National

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Assessment of Basic Competences and, on the other hand, to analyze the result itemized by counties.

According to the definition of integration, learning and behavioral disorder (BTM) - the Hungarian acronym -, a child with these special needs is a student who, according to the opinion of the expert committee, is significantly underperforming in age, has problems with social relations, learning, behavioral deficiencies, shows difficulties or specific tendencies in the integration into the community, and/or development in his/her personality but is not considered to have special education needs (SEN) (Public Education Act 2011. CXC.4. §. 3).

According to the definition of SEN, a child with requiring special treatment, is a student who, according to the opinion of the Committee of Experts, is physically, organoleptically, mentally or speech-impaired, has multiple disabilities, autism spectrum disorder or other mental development disorder (severe learning, attention or disability) (Public Educational Act 2011. CXC.4. §. 25).

Like in the previous year, our study was based on the results of those students who completed the National Assessment of Basic Competences test. Those who were exempt from the measurement are not considered in the study, so, this study has no data on pupils with autistic spectrum disorder, people with intellectual- and/or sensory disabilities.

Our study examines two BTM subgroups, pupils with integration disorder and behavioral disorder, and the SEN group who "struggle with persistent and severe disorder of cognitive functions or behavioral development". In this group there are those students who have: dyslexia, dysgraphia, dyscalculia, disorder of school skills, motor- or attention disorder, hyperkinetic behavior disorder, family, social or non-social behavioral disorder, or opposition disorder.

In this section of this paper, authors write about some new and relevant results and the brief explanation of the terms. In our previous paper, we presented the definition of Integration disorder (BTM-B) and behavioral disorder (BTM-M).

We talk about Integration Disorder (BTM-B) when a child has difficulty or not at all adapted to the group's values and rules. Behavioral disorder (BTM-M) is caused by undeveloped, insufficient social skills and disorder of social ability. Integration and behavioral disorders - especially for those living in sub-disturbance capacity - are manifestations of learning problems as well (Hanuska, 2001). These children may be characterized by inhibitory, anxious or aggressive behavior (Hanuska, 2001).

A serious form of integration and behavioral disorder is the childhood opposition disorder. Althoff et al. (2014) have shown that children without the diagnosis of oppositional disorder yet irritable are more likely to have problems of mood in their adulthood. The correlations of integration disorders were detailed by the authors in their previous study.

Dyslexia: Dyslexia is a disorder of language, speech, and learning reading skills. Its main symptom is the lack of reading ability from the level expected by age, education

and intelligence. More detailed analysis of dyslexia can be found in the previous study of the authors.

Dyscalculia: Dyscalculia refers to the inherited or innate affinity of the brain substrate for mathematical functions, it is a kind of learning disorder that affects the acquisition of school-level arithmetic skills, affecting about 3-6% of individuals (Kosc, 1974, Price & Ansari, 2013).

Dysgraphia: Disorder of writing is called dysgraphia. It can be associated with dyslexia, or it can occur on its own, either as a mild form of agronomy, as a result of brain injury, or as a result of poor movement coordination. This may be due to impaired perception or motion coordination, visual or auditory, analytical or component processing defects, or transcoding problems. It has two forms, formal and substantive. The writing of a child struggling with formal dysgraphia is disorganized, illegible, irregular, sometimes unrecognizable, with uneven fonts, descending-ascending lines, written and printed fonts within a word, incorrect spellings, difficulty in spelling, non-typing, typos. In case of content dysgraphia, there is no problem with the appearance of writing, but spelling is weak and student often fails to express his/her thoughts in writing, and he/she also has problems with grammatical operations. He/she makes a lot of mistakes when dictating (Ellis, 1982). In the case of unrecognized dysgraphia, the child is considered lazy and experiencing constant experience of failure that can affect his or her entire life. Dysgraphs with expert opinions can be exempted from the written examination of the school or use a word processor.

This article focuses on dysgraphia and the relationship between ADHD and dysgraphia. Our decision is also justified by the fact that while this is a very important topic in the literature, but neglected in the inland literature.

Children with learning disabilities are three times more likely to have written difficulties (Mayes, Calhoun, 2007a). In a study by Mayes and Calhoun (2006a), 60% of autistic children and 63% of ADHD had written disabilities with learning disabilities.

Studies report poorer handwriting quality in students of ADHD compared to the typically developing controls (Brossard-Racine et al., 2011; Graham et al., 2016; Racine et al., 2008) and in ASD students (Beversdorf et al., 2008). , 2001; Cartmill Rodger, Ziviani, 2009; Fuentes, Mostofsky, Bastian, 2009, 2010; Hellinckx et al., 2013; Johnson et al. 2013; Myles et al., 2003), and studies report a decrease in handwriting speed (Brossard-Racine et al., 2011; Graham et al., 2016; Hellinckx et al., 2013; Johnson et al., 2013; Racine et al., 2008).

Dysgraphia causes significant frustration and thus affects school performance. Difficulty in written expression predicted school performance 18 months later in 104 ADHD students , along with the correlation of reading ability, symptoms of ADHD opposition behavior, and medication (Molitor et al., 2016).

Specific neurocognitive abilities

Brain imaging studies show neurological differences between children living with and without dysgraphia (Berninger, Richards, 2010; Richards et al., 2015). Dysgraphia may

result from acquired neurological impairment (Rapcsak et al., 2009; Rapp et al., 2016), and dysgraphia and written disability are associated with the executive function and other neurocognitive impairment (Hooper et al., 2002; Mayes, 2002). Calhoun (2007b). Results clearly indicate a neurological basis, associated dysgraphia with the fine motor and visuo-motor deficcits (Brossard-Racine et al., 2011, Fuentes et al., 2009, Kushki et al., 2011, Smits-Engelsman, Niemeijer, Van Galen, 2001, Tseng, Cermak, 1993).
Children with ADHD and autism have similar neuropsychological profiles including the strength of visual reasoning to IQ and the weakness of graphomotor ability (Dakin, Frith, 2005; Mayes, Calhoun, 2003a, 2003b, 2004b, 2006b, 2008; Siegel et al, 1996, Marton, Kövi, & Egri, 2018). Research findings indicate that graphomotor deficits in attention and performance speed are likely to coexist, and that most students with ADHD and autism perform poorer in all three domains (Mayes, Calhoun, 2007b). In a study of 886 children (6-16 years) with ADHD or autism and normal intelligence, the two diagnostic groups did not differ in terms of graphomotor ability, attention, working memory, and processing speed (Mayes et al., 2012).

Mayes et al. (2019) included 1,034 students (ADHD-C, ADHD-I, ASD, control) in their study. The aim of the study is to assess the prevalence of dysgraphia and determine whether graphomotor standard scores improve with age. Based on the results, all three groups (ASD, ADHD-C, and ADHD-I) scored lower on their IQ score than their undiagnosed counterparts, with no significant difference between the groups. More than half (59%) of students with ASD, ADHD-C, and ADHD-I had dysgraphia, and 92% had weakness with graphomotor abilities. There was no significant difference in the frequency of dysgraphia between the three diagnostic groups and the three age groups (6-7 years / 56%, 8-10 years (60% and 11-16 years / 61%), indicating that the prevalence of discretion has not decreased with age, despite the fact that older children have been in school for more than 10 years. Students with writing problems cannot keep up with notes (Graham, 1999), and written problems negatively affect their school performance (Mayes, Calhoun, 2007b, Molitor et al., 2016).

Dysgraphia has a significant psychosocial impact on students, such as low self-esteem, anxiety, sadness, and reduced interest in school. Despite the high prevalence of dysgraphia and its negative effects, schools do not properly assess its importance and provide an appropriate response to students with dysgraphia (Hooper et al., 1993; Mayes, Calhoun, 2007a). Two additional studies (Case-Smith, 2002; Graham, Harris, & Fink, 2000) found that students between the ages of 7 and 10 with dysgraphia ($n = 29$ women) received appropriate development and therapy, which increased their handwriting readability by 14% (as opposed to non-9 students), which is a significant change ($p = 0.054$), but the change in handwriting speed and numerical readability did not differ between the developmental group and the control groups (Case-Smith, 2002). The low number of items does not allow a general conclusion to be drawn from the above results, but it is a good guideline for formulating treatment recommendations.

In a meta-analysis, stimulant drugs were shown to significantly improve performance in children with ADHD in many areas (not just handwriting), including continuous performance, alertness, and reaction time (Kavale, 1982). Stimulant medication

improves handwriting in children with ADHD after 4 weeks of taking methylphenidate (Flapper, Houwen, Shoemaker, 2006). Stimulant drugs may be important treatment components for many students with ADHD, but medication alone is clearly not a solution to treat dysgraphia (Mayes, et al., 2019).

Intervention recommendations in the light of research

Numerous studies suggest that dysgraphia in many cases is stubbornly resistant to developmental therapeutic intervention and is present in all ages. Schools need to focus on identifying and compensating for the problem and provide students with dysgraphia with ways to improve their handwriting. With the development of technology, effective solutions are now available. Word processing programs allow students to complete assignments in a readable way and enhance their performance (Forgrave, 2002). Typing is significantly easier for students than handwriting (MacArthur, 1996, 2000), and allows them to focus on higher thought processes, such as organization and control (Forgrave, 2002). The effectiveness of technical devices has been demonstrated in a small number of studies (Hetzroni Shrieber, 2004). At the same time, MacArthur (1996, 2000) emphasizes the need for proper instruction in typing and word processing, in his view, it is not enough to provide students with proper technological condition. Therefore, the use of technical tools to acquire knowledge (eg keyboard use, word processing skills) should become part of education. Speech recognition software can help compensate for writing problems and improving writing skills (Forgrave, 2002). The aim of the development is to reduce the gap between thought and writing. Additional suggestions for addressing students' graphomotor weakness to maximize learning and performance; (a) emphasizing learning activities that are not primarily dependent on writing, (b) reducing the amount of written work and need for copying (c) modifying tests (eg multiple choice, true / false and completed questions, and not open-ended) (d) ensuring that the student does not have to rely solely on the student's own notes, (e) enabling dictated performance and testing (such as spelling tests) and using speech recognition software for written assignments, and (f) classify as content (Mayers et al., 2019).

The main purpose of the intervention is to increase and sustain students' enthusiasm and motivation to acquire school and academic knowledge, and to minimize frustration, low morale, and low self-esteem among students with dysgraphia.

Attention Deficit and Hyperactivity Disorder (ADHD) is a symptom of inattention, hyperactivity, and impulsivity according ti the BNO 10 Criterion system.
The diagnosis of ADHD can only be set up to a separate criteria system according to the diagnostic system BNO 10. (2017 Health Bulletin No. 3, Communication 18).

According to different studies ADHD affects 3 - 7% to 15,5% of school-age children (APA, 2000), (Biederman et Al., 2002). Disorder may appear in early childhood, often before school age (Barkley, 2003), but most often it becomes apparent at school age (Selikowitz, 2010). It is also important to note that the diagnostic procedure for ADHD has not yet reached a uniform diagnostic protocol; the opinions of some expert

committees may differ from each other (Szabó & Vámos 2012). Attention Deficit Hyperactivity Disorder (ADHD) is a neuropsychiatric disorder showing a large family-accumulation and which persist in adulthood in 40-66% of the persons involved (Somogyi, Máté, Miklós, 2015).

Due to the symptoms of ADHD, it also causes confusion in behavior, social competences and school performance (Sciutto et Al, 2000, Marton, Egri, Erdős, Gergály, & Kövi, 2017). Children with ADHD, compared to their abilities, under-perform, repetition of school year and dropping-out is more common among them (Fried et al 2016). A study found that in 73-75% of them arise learning disabilities (Mayes & Calhoun, 2006) and it is found that amongst children of ADHD, 34% live with dyscalculia (Márkus et. al., 2005).

Children with ADHD are less popular at school and have fewer friends (Nijmeijer et al., 2008), which has also impact on the quality of self-development and self-integration. Adolescents with combined type of ADHD can make less distinction between positive and negative emotional expressions than their non-ADHD counterparts.

In the absence of proper care, development, or treatment, children often become victims of life-long stigma and exclusion (Szűcs 2003, Chou, Liu, Yang, Yen & Hu, 2018. On the basis of all these, it can be said that both BTM and SEN affected children are easily can be victims of school harassment, they become lonely, distressed and have more depressive symptoms than others (Andreou, Didaskalou & Vlachou, 2013, Lebowitz, 2016).

ADHD can also cause many comorbid psychiatric illnesses. Possa et al. (2005) testing children diagnosed with ADHD found 40% with behavioral disorder, while 2.8% had compulsive disorder. These children also have more frequent anxiety, depressive disorders (Tsang, Kohn, Efron et al., 2015) and bipolar disorder (Donfrancesco, Di Trani, Andriola, Leone et al. 2017). Gadow et al. (2002) described connection of Tic and ADHD disorder. There are more impulsive symptoms as well, including binging (Steadman & Knouse, 2016). There is also a higher rate of suicide among those with ADHD, most of which are related to conflicts with parents (Daviss & Diler, 2014). In addition, although ADHD was typically considered a childhood disorder, many studies in recent decades have shown that in 40-66% of the cases it persist also in adulthood (Somogyi, Máté & Miklósi, 2015). According to Simon Viktória's 2009 meta-analysis, ADHD can be diagnosed at 2.5% of the adult population.

Childhood ADHD significantly correlated with risk of suicide in adulthood (Yoshimasu et al, 2019). Balázs et al found a strong relationship between ADHD and completed suicide, suicide attempt, suicidal thoughts and self-harm in childhood, adolescent and adulthood. (2014). These days there is no evidence how personality disorders moderate the relationship between ADHD and suicide. Relationship between ADHD and comorbid personality disorders was demonstrated by the occurrence of suicide (Wasserman, 2016). Different points of view are also expressed: some studies suggest the relationship between suicide and ADHD. Some of them explain it as a part of co-

morbidities (James et al, 2004, Ljung et al, 2014), others entirely explain the relationship between the co-morbid events (anxiety, mood, substance use) (Balazs et al, 2014).

22% of children diagnosed with ADHD are compliant with the MINI suicide criteria, whereas the control group 10.4% fulfilled the criteria (Yoshimasu et al, 2019). The combined ADHD with symptoms of personality disorders has played an important role in terms of suicide risk in adults who fail to meet the criteria for adult ADHD (Yoshimasu et al, 2019).

There is evidence of interaction between ADHD and suicide risk among these psychiatric comorbidities; generalized anxiety disorder (GAD), and hypomanic episode substance-related disorders (Yoshimasu et al, 2019).

ADHD is such kind a disorder that can be treated under a professional protocol. Besides the medication of ADHD – which is a symptomatic treatment, but it supports school performance - there are other non-pharmacological intervention. In our previous paper we wrote about dietary restrictions are included in the therapeutic repertoire. In 2019, Wigton and Kriegbaum published about the effectiveness of neurofeedback therapy in ADHD, and Moreno-Garcia et al (2019) compared neurofeedback therapy to behavioral therapy and pharmaco therapy. Physical exercise was also found to be very effective in ADHD (Pan et al 2019, Neudecker et al 2019). The effectiveness of several psychological and psychotherapeutic methods has also been demonstrated in the treatment of ADHD. Cognitive Behavioral Therapies (Wolraich et al. 2011, Floet et al., 2010) and Behavior Modification Techniques are the most common (Pelham & Fabiano 2008, Evans et Al. 2014), and these methods efficiency is proved. In addition, parental training is also very effective, where the most important behaviors for parents to learn are behavioral control, consistent reinforcement, structuring everyday activities, setting up and maintaining rules (Pfiffner & Haack 2014). Venman et al. (2019) published about a successful teacher training programme, Ciesielski et al. (2019) wrote about academic skills training group for ADHD children and their parents, and Moore et al. (2019) published a systemic review of school based interventions.

OCCURRENCE IN OUR SAMPLE

From the data of the National Assessment of Basic Competences we can only conclude how many per cent of the rate of the pupils occur in the researcher database according to the SEN or BTM code known and registered by schools. If the school initiates an investigation, the opinion of the expert will be returned to the school, but in the case of changing a school, the expert's advisement may not be available to the new school as well. So the data received here can or will be lower than the real data. Nevertheless, it is interesting to know how many known girls or boys with SEN and BTM in our sample were. Table 1. shows the proportion of girls and boys with SEN in the samples.

	GIRL	**BOY**	**SUM**
Class/Grade	SEN %	SEN %	SEN %
6	1334 2,96%	2700 5,79%	4034 4,40%
8	1253 2,96%	2415 5,54%	3668 4,27%
10	860 2,18%	1892 4,45%	2752 3,32%

Table 1 The proportion of girls and boys with SEN involved in 2018 Competence Measurement Assessment samples

Table 2 shows the proportion of girls and boys with difficulties of integration in our sample.

	GIRL	**BOY**	**SUM**
Class/Grade	BTM-B %	BTM-B %	BTM-B %
6	415 0,96%	756 1,75%	1171 1,35%
8	296 0,73%	540 1,33%	836 1,03%
10	152 0,39%	263 0,65%	415 0,52%

Table 2 The proportion of girls and boys with BTM-B involved in 2018 Competence Assessment samples

Table 3 shows the proportion of girls and boys with behavior disorder in the samples.

	GIRL	**BOY**	**SUM**
Class/Grade	BTM-M %	BTM-M %	BTM-M %
6	289 0,66%	704 1,62%	993 1,15%
8	207 0,51%	422 1,03%	629 0,77%
10	69 0,17%	131 0,32%	200 0,25%

Table 3 The proportion of girls and boys with BTM-M involved in 2018 Competence Assessment samples

In Ireland, special education for students with special needs (SEND, the Hungarian equivalent of SNI) has been organized since 1999 taking into account the Salamanca Declaration (United Nations Economic and Social Council, 1994, in Scanlon, McEnteggart, Barnes-Holmes, 2014). According to a recent study, students with SEN in mathematics, English and other subjects are significantly behind, with only 16.5%

achieving the expected performance (Scanlon, McEnteggart, Barnes-Holmes, 2014). Low school performance is a risk factor for transient stress and anxiety (West, Sweeting, Young, 2008). Lack of school performance reduces the chances of finding a job (Asghar, Burchardt, 2005). It is associated with lower income (Rouse, Florian, 2010), lower self-esteem (Scanlon, McEnteggart, Barnes-Holms, 2014) and less social involvement (World Health Organization, 2011, in Scanlon, McEnteggart, Barnes-Holmes, 2014). compared to typically developing students. In cognitive outcomes (mathematics, spelling, reading comprehension), students with ADHD are significantly lagging behind the SNI and control groups. Students with SNI and ADHD did not recognize the deficiencies. SNI students attributed more control to others and unknown sources than their typically developing counterparts, or sometimes more than their ADHD counterparts. The self-esteem of students with SEN is lower. The cognitive performance of ADHD students was lower than that of the control group, but the highest was in the SNI group (Scanlon, McEnteggart, Barnes-Holmes, 2014). Students with ADHD who recognize their cognitive deficits are more likely to attribute cognitive and social control to others than to themselves. The authors of the study emphasize the problem of low school performance in terms of inter-school interoperability (primary, secondary, university), which increases the risk of dropping out (West et al., 2008).

One of the main goals of our study last year was is to analyze how children of SEN and of BTM performed in the National Assessment of Basic Competences. This analysis was performed this year as well, but as we did not find any differences compared to last year's results, we do not detail them separately. Examining with tests reading comprehension of children with ADHD, Lewandowski, Hendricks and Gordon (2015) found slower reading speed, poorer understanding, inaccurate use of words, and more errors than they found with other children. These deficiencies often do not disappear growing up (Miranda, Mercader, Fernández & Colomer, 2017). Thereby those who affected, become subjects to continuous frustration, which may have long-term negative consequences. The results and previous studies predict long-term performance related problems and complications. Follow-up study of ADHD children and adolescents not only showed poorer school progression, more frequent school year repetition, dropout of school, unpopularity, fewer friends, possibly social isolation, but also greater crime predisposition, drug problems, self-harm or even attempted suicide (Barkley, 1990, Hihnshaw, 2012). There also can be observed gender differences in the consequences of ADHD and dyslexia, as girls are more likely to internalize their emotions, leading to sadness and anxiety, while boys more often externalize their emotions, such as anger, combativeness, aggression (Mano, Mano, Denton és mtsai 2017).

HYPOTHESES AND RESULTS OF THIS STUDY

Based on our experience gained during the processing of the previous year's data, we can say that BTM or SNI students are below average national literacy and mathematics

performance (regardless of school types or other characteristics). Regional differences highlight the fact that different regional results have been obtained - so we will conduct a further planned study at a later time. Because SNI results are often subdivided in the data set (we have SNI standard breakdowns), so in the next step we would like to examine the extent to which the different SNI / BTM categories are related to each other (however, explored in this article). So, in our present article, we were primarily interested in whether BTM and SNI ratios show regional differences, and, if so, in which areas there are higher or lower ratios nationwide.

Our hypothesis is that the national levels are not the same - in fact, there will be significant differences, which, moreover, are reflected in the fact that if a region has a higher rate, the other rates are expected to be higher. Furthermore, in areas where living conditions are better we expect lower incidence, assuming the impact of the treatment and development provided.

However, due to the large number of cases (the case numbers will be displayed in the tables), we did not primarily look for significance, since with such case numbers, it is expected that almost all differences will appear as significant differences. In contrast, we performed corrected standardized residual values for each cell, with absolute values greater than 2 indicating that there were more / fewer subjects in the area than we would experience with independent criteria. In this sense, therefore, we tried to make a distinction not only in terms of significance but also in terms of a standardized measure of effect. Our studies were conducted and tested at both regional and county level.

It is important to note that we also examined the results by measurement year (2017 and 2018), however, the value of Cramér's V coefficient was less than 0.01, so the difference between the results of the two years seemed to be so minimal we saw the meaning of treating different years separately - the results are stagnant at the level of the years, there are no significant differences or changes.

Thus, we unified the results of the two years (2017 and 2018) and examined the regional / county differences of the students (250128 students in 2017 and 249805 students in 2018) and the two years in one sample regarding the BTM / SNI distribution. We chose to treat the data for the two years as one because grades 5-7-9 in 2017 will not be surveyed in 2017, however, in 2018 they will be 6-8-10 (hence the focus), so in fact a total 6 grades (5-10) are evaluated. It is also important to highlight that in the school type / gender / grade breakdowns, we even report the performance results in the appendices, so these results are not discussed here. Focusing on our main hypothesis (county and regional differences), we now want to focus solely on these results.

County differences

Because the SNI codes are basically on a much broader spectrum, our current analysis is eventually limited to analyzing the 5 BTM codes, as well as showing the rates of dyslexia, dysgraphia, dyscalculia, and ADHD (the proportion of those with no SNI diagnosis at Table 1., Table 2 and Table 3, so this area will not be included in further breakdowns to increase the transparency of the tables). We first introduce the BTM

categories, and then, by county / regional and grade / school type, we present both the SNI and BTM ratios. These scaled tables are not subjected to further analysis and the results are described in descriptive terms.

In the case of BTM, it is well known that, overall, we have a much higher cardinality than in the case of SNI (mainly because SNI was further stratified). For this reason, in the latter case, the data are presented only in a descriptive way, showing the proportions - as the complete case numbers can be found here.

In the case of BTM categories, the descriptiveness was supplemented by the inclusion of corrected standardized residuals for cross-table analyzes. This value (RES) indicates which areas / categories / synergies are those for which there is a more pronounced deviation from the "independent case". In the negative case, we can say that we can see lower than expected headcount data (the expected value indicates that when we consider BTM codes at regional / county level independent of localization what value we can expect), in the positive case the frequency / prevalence is higher. It is important, therefore, that these residual values indicate that the occurrence of BTM codes does indeed appear locally as a different phenomenon; the difference, but the fluctuations are also more significant by standardized measure (residuals).

In the case of residuals, in the case of absolute values between 3 and 10, we considered a smaller cut (which can be considered professionally as an indicator level) because of the large cumulative number of cases), and above 10 we consider the difference to be significant.

		Integration Disorder		Writing Difficulty		Reading Difficulty		Behavioral Disorder		Calculating Difficulty		
		no	yes	no	yes	no	yes	no	yes	no	yes	N
Budapest	N	89456$_a$	803$_a$	84917$_a$	5342$_a$	85394$_a$	4865$_a$	89680$_a$	579$_a$	86108$_a$	4151$_b$	90259
	RES	0,1	-0,1	0,1	-0,1	-0,3	0,3	1,5	-1,5	-3,0	3,0	
Baranya	N	17445$_a$	72$_b$	16417$_a$	1100$_b$	16484$_a$	1033$_b$	17465$_a$	52$_b$	16738$_a$	779$_a$	17517
	RES	6,9	-6,9	-2,0	2,0	-3,2	3,2	6,3	-6,3	-0,2	0,2	
Bács-Kiskun	N	25119$_a$	118$_b$	23687$_a$	1550$_a$	23793$_a$	1444$_b$	25158$_a$	79$_b$	23891$_a$	1346$_b$	25237
	RES	7,4	-7,4	-1,5	1,5	-2,6	2,6	7,3	-7,3	-7,3	7,3	
Békés	N	16979$_a$	320$_b$	16170$_a$	1129$_b$	16243$_a$	1056$_b$	17084$_a$	215$_b$	16428$_a$	871$_b$	17299
	RES	-13,6	13,6	-3,4	3,4	-4,4	4,4	-9,2	9,2	-4,1	4,1	
Borsod-Abaúj-Zemplén	N	35161$_a$	297$_a$	33385$_a$	2073$_a$	33499$_a$	1959$_a$	35174$_a$	284$_b$	33601$_a$	1857$_b$	35458
	RES	1,2	-1,2	0,7	-0,7	-1,4	1,4	-2,9	2,9	-7,9	7,9	
Csongrád	N	19431$_a$	76$_b$	18546$_a$	961$_b$	18571$_a$	936$_b$	19447$_a$	60$_b$	18834$_a$	673$_b$	19507
	RES	7,6	-7,6	6,0	-6,0	3,6	-3,6	6,4	-6,4	6,7	-6,7	
Fejér	N	20385$_a$	368$_b$	19228$_a$	1525$_b$	19461$_a$	1292$_b$	20496$_a$	257$_b$	19673$_a$	1080$_b$	20753
	RES	-13,8	13,8	-8,9	8,9	-5,6	5,6	-10,0	10,0	-5,7	5,7	
Győr-Moson-Sopron	N	23417$_a$	204$_a$	22808$_a$	813$_b$	22774$_a$	847$_b$	23473$_a$	148$_a$	23083$_a$	538$_b$	23621
	RES	0,5	-0,5	16,6	-16,6	12,5	-12,5	1,0	-1,0	16,4	-16,4	
Hajdú-Bihar	N	30081$_a$	535$_b$	28788$_a$	1828$_a$	28809$_a$	1807$_b$	30183$_a$	433$_b$	29032$_a$	1584$_b$	30616
	RES	-16,4	16,4	-0,3	0,3	-4,3	4,3	-16,2	16,2	-6,7	6,7	
Heves	N	16338$_a$	152$_a$	15674$_a$	816$_b$	15657$_a$	833$_a$	16368$_a$	122$_a$	15696$_a$	794$_b$	16490
	RES	-0,4	0,4	5,4	-5,4	1,8	-1,8	-1,0	1,0	-2,6	2,6	

		Integration Disorder		Writing Difficulty		Reading Difficulty		Behavioral Disorder		Calculating Difficulty		
		no	yes	no	yes	no	yes	no	yes	no	yes	N
Jász-Nagykun-Szolnok	N	20319$_a$	116$_b$	19012$_a$	1423$_b$	19233$_a$	1202$_b$	20367$_a$	68$_b$	19446$_a$	989$_b$	20435
	RES	5,1	-5,1	-6,4	6,4	-3,3	3,3	6,2	-6,2	-3,0	3,0	
Komárom-Esztergom	N	15264$_a$	189$_b$	14317$_a$	1136$_b$	14381$_a$	1072$_b$	15291$_a$	162$_b$	14646$_a$	807$_b$	15453
	RES	-4,4	4,4	-7,6	7,6	-8,8	8,8	-5,7	5,7	-5,0	5,0	
Nógrád	N	8938$_a$	160$_b$	8824$_a$	274$_b$	8756$_a$	342$_b$	8982$_a$	116$_b$	8817$_a$	281$_b$	9098
	RES	-8,8	8,8	11,9	-11,9	6,9	-6,9	-7,0	7,0	6,2	-6,2	
Pest	N	58354$_a$	323$_b$	54490$_a$	4187$_b$	54969$_a$	3708$_b$	58409$_a$	268$_b$	56140$_a$	2537$_a$	58677
	RES	9,4	-9,4	-13,2	13,2	-10,9	10,9	7,0	-7,0	1,1	-1,1	
Somogy	N	14901$_a$	210$_b$	13883$_a$	1228$_b$	14080$_a$	1031$_b$	14984$_a$	127$_b$	14164$_a$	947$_b$	15111
	RES	-6,6	6,6	-11,6	11,6	-8,1	8,1	-2,4	2,4	-11,3	11,3	
Szabolcs-Szatmár-Bereg	N	32074$_a$	263$_a$	31361$_a$	976$_b$	31593$_a$	744$_b$	32107$_a$	230$_a$	31536$_a$	801$_b$	32337
	RES	1,6	-1,6	22,9	-22,9	25,3	-25,3	-0,7	0,7	17,5	-17,5	
Tolna	N	10963$_a$	42$_b$	10009$_a$	996$_b$	10230$_a$	775$_b$	10962$_a$	43$_b$	10310$_a$	695$_b$	11005
	RES	5,8	-5,8	-14,0	14,0	-7,9	7,9	3,7	-3,7	-9,8	9,8	
Vas	N	11996$_a$	25$_b$	11536$_a$	485$_b$	11630$_a$	391$_b$	11994$_a$	27$_b$	11802$_a$	219$_b$	12021
	RES	8,1	-8,1	8,9	-8,9	10,4	-10,4	6,1	-6,1	14,0	-14,0	
Veszprém	N	16179$_a$	119$_b$	15319$_a$	979$_a$	15484$_a$	814$_b$	16233$_a$	65$_b$	15781$_a$	517$_b$	16298
	RES	2,3	-2,3	-0,4	0,4	2,2	-2,2	4,4	-4,4	7,8	-7,8	
Zala	N	12666$_a$	75$_b$	11928$_a$	813$_b$	12055$_a$	686$_a$	12680$_a$	61$_b$	12156$_a$	585$_a$	12741
	RES	3,7	-3,7	-2,2	2,2	-0,1	0,1	2,8	-2,8	-1,0	1,0	

Table 4: County differences in BTM phenomena, supplemented by standardized residuals

When interpreting the results, we differentiated three types of county differentiation. We have marked Budapest in white (it will serve us as a benchmark because of the size of the capital, as the overcrowding in the capital is so large that it automatically appears as a reference point in such analyzes. White colour indicates that the county - although showing differences, we do not see any major differences - residual displacements are not significant.
The cases marked in gray were those where the residuals did not exceed 10, but for almost all BTM codes a peak value of 2 to 10 was present (we are not yet deal with positive or negative at this point). In addition, we also highlighted counties in blue. In these counties, the residuals showed significant differences in the same direction, with fluctuations greater than 10, in one or typically several cases. Let us then examine which counties for which BTM codes are in the gray and even more prominent blue classifications.

Counties marked in white - basic level

		Integration Disorder		Behavior Disorder		Writing Difficulty		Reading Difficulty		Calculating Difficulty		N
		no	yes	no	yes	no	yes	no	yes	no	yes	
Budapest	N	89456$_a$	803$_a$	89680$_a$	579$_a$	84917$_a$	5342$_a$	85394$_a$	4865$_a$	86108$_a$	4151$_b$	90259
	RES	0,1 →	-0,1	1,5 →	-1,5	0,1 →	-0,1	-0,3 →	0,3	-3,0 ↑	3,0	
Borsod-Abaúj-Zemplén	N	35161$_a$	297$_a$	35174$_a$	284$_b$	33385$_a$	2073$_a$	33499$_a$	1959$_a$	33601$_a$	1857$_b$	35458
	RES	1,2 →	-1,2	-2,9 ↑	2,9	0,7 →	-0,7	-1,4 →	1,4	-7,9 ↑	7,9	
Heves	N	16338$_a$	152$_a$	16368$_a$	122$_a$	15674$_a$	816$_b$	15657$_a$	833$_a$	15696$_a$	794$_b$	16490
	RES	-0,4 →	0,4	-1,0 →	1,0	5,4 ↓	-5,4	1,8 →	-1,8	-2,6 ↑	2,6	
Zala	N	12666$_a$	75$_b$	12680$_a$	61$_b$	11928$_a$	813$_b$	12055$_a$	686$_a$	12156$_a$	585$_a$	12741
	RES	3,7 ↓	-3,7	2,8 ↓	-2,8	-2,2 ↑	2,2	-0,1 →	0,1	-1,0 →	1,0	

Table 5 Basic counties, with minor variations for each phenomenon

Counties marked in gray - minor differences

		Integration Disorder		Behavior Disorder		Writing Difficulty		Reading Difficulty		Calculating Difficulty		N
		no	yes	no	yes	no	yes	no	yes	no	yes	
Csongrád	N	19431$_a$	76$_b$	19447$_a$	60$_b$	18546$_a$	961$_b$	18571$_a$	936$_b$	18834$_a$	673$_b$	19507
	RES	7,6 ↓	-7,6	6,4 ↓	-6,4	6,0 ↓	-6,0	3,6 ↓	-3,6	6,7 ↓	-6,7	
Jász-Nagykun-Szolnok	N	20319$_a$	116$_b$	20367$_a$	68$_b$	19012$_a$	1423$_b$	19233$_a$	1202$_b$	19446$_a$	989$_b$	20435
	RES	5,1 ↓	-5,1	6,2 ↓	-6,2	-6,4 ↑	6,4	-3,3 ↑	3,3	-3,0 ↑	3,0	
Komárom-Esztergom	N	15264$_a$	189$_b$	15291$_a$	162$_b$	14317$_a$	1136$_b$	14381$_a$	1072$_b$	14646$_a$	807$_b$	15453
	RES	-4,4 ↑	4,4	-5,7 ↑	5,7	-7,6 ↑	7,6	-8,8 ↑	8,8	-5,0 ↑	5,0	
Veszprém	N	16179$_a$	119$_b$	16233$_a$	65$_b$	15319$_a$	979$_a$	15484$_a$	814$_b$	15781$_a$	517$_b$	16298
	RES	2,3 ↓	-2,3	4,4 ↓	-4,4	-0,4 →	0,4	2,2 ↓	-2,2	7,8 ↓	-7,8	
Baranya	N	17445$_a$	72$_b$	17465$_a$	52$_b$	16417$_a$	1100$_b$	16484$_a$	1033$_b$	16738$_a$	779$_a$	17517
	RES	6,9 ↓	-6,9	6,3 ↓	-6,3	-2,0 →	2,0	-3,2 ↑	3,2	-0,2 →	0,2	
Bács-Kiskun	N	25119$_a$	118$_b$	25158$_a$	79$_b$	23687$_a$	1550$_a$	23793$_a$	1444$_b$	23891$_a$	1346$_b$	25237
	RES	7,4 ↓	-7,4	7,3 ↓	-7,3	-1,5 →	1,5	-2,6 ↑	2,6	-7,3 ↑	7,3	

Table 6 Table of minor differences in county breakdowns where there was a difference in not only for one but also for several categories

Baranya County: it can be observed that in this case the reading difficulty is higher than the expected independent case (3.2 residency standard), however, there are less

behavioral and integration difficulties among the students of the county (-6.3 and -6 , 9 standardized values).

Bács-Kiskun County: the situation is similar to that of Baranya County. Here, too, behavioral (-7.3) and integration difficulties (-7.4) are lower, but here, besides reading difficulty (2.6), there is a very large difference in the numerical difficulty (7.3) - so these two aspects of learning difficulties are more prevalent than it is in the white counties (Budapest, BAZ, Heves and Zala counties).

Csongrád County: We can observe an interesting phenomenon in this county. Each BTM code is significantly lower than one would expect in an independent case (insertion -7.6; behavior -6.4; writing -6.0; reading -3.6; and counting -6.7). Thus, for this county, we can say that virtually all BTM codes are present in lower concentrations than in other areas of the country.

Jász-Nagykun Szolnok County: it is just the opposite of the former counties, that is Baranya and Bács counties. Here, integration (-5.1) and behavioral (-6.2) difficulties are lower, but learning difficulties are higher (writing 6.4; reading 3.3; counting 3.0).

Komárom-Esztergom County: the opposite of Csongrád County. Here each proportion of BTM code is proportional to what would be seen in the case of a department independent phenomenon. In this case, even in the case of fit (4.4), behavior (5.7), writing (7.6), reading (8.8) and numeracy (5.0), even the adjusted standard values are significantly above 2 , A reference value of 0.

Veszprém County: this county shows almost the same data as Csongrád County. With the exception of the value of writing difficulty (0.4) (which, in essence, moves at the level expected in the independent case), integration difficulty (-2.3), behavioral difficulty (-4.4), reading difficulty (-2, 2) and the computational difficulty (-7.8) occurs at a significantly lower rate than one would expect in an independent case.

In the case of the gray-colored counties, we can say that typically 3 different modes can be observed. On the one hand, we see lower levels than expected (in the independent case) in the case of Veszprém and Csongrád Counties, while in the case of Komárom-Esztergom County the opposite is true: we experienced higher rates than would be expected in the independent case. In addition, there are also mixed counties, where the level of behavior / integration is typically inversely related with the level of learning difficulties (i. e., there are opposite frequency / rate differences).

Counties marked in blue- larger differences

		Integration Disorder		Behavior Disorder		Writing Difficulty		Reading Difficulty		Calculating Difficulty		N
		no	yes	no	yes	no	yes	no	yes	no	yes	
Békés	N	16979_a	320_b	17084_a	215_b	16170_a	1129_b	16243_a	1056_b	16428_a	871_b	17299
	RES	-13,6	13,6	-9,2	9,2	-3,4	3,4	-4,4	4,4	-4,1	4,1	
Fejér	N	20385_a	368_b	20496_a	257_b	19228_a	1525_b	19461_a	1292_b	19673_a	1080_b	20753
	RES	-13,8	13,8	-10,0	10,0	-8,9	8,9	-5,6	5,6	-5,7	5,7	
Győr-Moson-Sopron	N	23417_a	204_a	23473_a	148_a	22808_a	813_b	22774_a	847_b	23083_a	538_b	23621
	RES	0,5	-0,5	1,0	-1,0	16,6	-16,6	12,5	-12,5	16,4	-16,4	
Hajdú-Bihar	N	30081_a	535_b	30183_a	433_b	28788_a	1828_a	28809_a	1807_b	29032_a	1584_b	30616
	RES	-16,4	16,4	-16,2	16,2	-0,3	0,3	-4,3	4,3	-6,7	6,7	
Nógrád	N	8938_a	160_b	8982_a	116_b	8824_a	274_b	8756_a	342_b	8817_a	281_b	9098
	RES	-8,8	8,8	-7,0	7,0	11,9	-11,9	6,9	-6,9	6,2	-6,2	
Pest	N	58354_a	323_b	58409_a	268_b	54490_a	4187_b	54969_a	3708_b	56140_a	2537_a	58677
	RES	9,4	-9,4	7,0	-7,0	-13,2	13,2	-10,9	10,9	1,1	-1,1	
Somogy	N	14901_a	210_b	14984_a	127_b	13883_a	1228_b	14080_a	1031_b	14164_a	947_b	15111
	RES	-6,6	6,6	-2,4	2,4	-11,6	11,6	-8,1	8,1	-11,3	11,3	
Szabolcs-Szatmár-Bereg	N	32074_a	263_a	32107_a	230_a	31361_a	976_b	31593_a	744_b	31536_a	801_b	32337
	RES	1,6	-1,6	-0,7	0,7	22,9	-22,9	25,3	-25,3	17,5	-17,5	
Tolna	N	10963_a	42_b	10962_a	43_b	10009_a	996_b	10230_a	775_b	10310_a	695_b	11005
	RES	5,8	-5,8	3,7	-3,7	-14,0	14,0	-7,9	7,9	-9,8	9,8	
Vas	N	11996_a	25_b	11994_a	27_b	11536_a	485_b	11630_a	391_b	11802_a	219_b	12021
	RES	8,1	-8,1	6,1	-6,1	8,9	-8,9	10,4	-10,4	14,0	-14,0	

Table 7 Major Differences in BTM Phenomena - List of Counties with Significant Differences in One Category and Smaller Differences in Other Categories

The counties marked in blue further obscure this picture, as in this case there is at least one area that stands out significantly (and here we can also mean that the number of students in the code is extremely low in the county).

Békés County: In the case of Békés County, the standard value of the difficulty of integration (13,6) is very significant. Thus, the proportion of students who go to school with integration problems is very high compared to other counties.

Fejér county: Similarly to Békés, the difficulty of integration is high (13.8), but this county also has an extremely high behavioral difficulty (10.0).

Győr-Moson-Sopron County: as we mentioned above, the extremely low can also be said to be outstanding. This is what we experience in this county. In the case of integration and behavioral difficulties (-0.5 and -1.0) we cannot say outstanding results, but in the case of writing (-16.6), reading (-12.5) and numeracy (-16.4) the situation is different. We find and we experience extremely low rates in these areas, in connection with this county.

Hajdú-Bihar County: In Hajdú-Bihar the situation is the same as in Fejér. In addition to integration (16.4), the behavioral (16.2) ratio is also very high.

Nógrád County: they are listed only because of the extremely low rate of writing difficulty (-11.9), because although the other areas show even more significant differences, learning difficulties are low but behavioral / integration difficulties are higher.

Pest County: The reading (10.9) and writing (13.2) difficulty rates are extremely high in this county compared to other counties.

Somogy County: the situation is similar to Pest in the case of this county, although here, in additione to the writing difficulty (11,6) is also the numerical difficulty (11,3) is very high (reading difficulty also seems to be many with the standard value of 8,1 but not shows the "blue colored" category).

Szabolcs-Szatmár-Bereg County: The interesting thing about this county is that the level and proportion of learning difficulties are very, very low. The writing difficulty is -22.9, the reading difficulty is -25.3, and the computation difficulty is -17.5.

Tolna County: The writing difficulty rate for this county is particularly high (14.0).

Vas County: The situation is similar to Győr-Moson-Sopron County, where the proportion of reading (-10.4) and numerical (-14.0) difficulties is low compared to the other counties.

Thus, it can be said that synergies can be observed (learning / behavior), but here too - as in the "gray colored" counties - there are significant differences from the other side. Sometimes they move together (Vas, Győr-Moson-Sopron) and sometimes they are opposite (higher behavior / lower learning, or vice versa). So we do not see a unified picture in this regard.

All in all, in our hypothesis, differences are expected at county level, but in other respects it is thoughtful that the different phenomena do not show the expected strong interactions. At the county level, this type of interaction is differentiated - there are either lower / higher or behavioral / integration or learning (reading / writing / calculating) phenomena - but they do not always seem to be related in the same direction, but at the county level. It can be observed that there are significant differences in the proportion of BTM phenomena at the county level. This is the reason why when comparing the SNI phenomena, we must first take into account these regional differences - we can then discover and map the real synergies and relationships.

Thus, it can be stated that there are county characteristics, but these are definitely worth exploring and studying (unfortunately, in the present study, there were not enough cases available for district examinations). In order to correct the differences, it is worth examining whether this type of typing may not appear in a larger breakdown, at a regional level, since then regional adjustments may be sufficient.

The following pages describe the 2017 and 2018 ratios by BTM codes (for illustrative purposes only) in the different categories. 1-1 categories and 1-1 layer breakdowns were considered 100% when the table was created (for example, in the case of reading difficulties, students in grades 6-8-10 had a 100% breakdown of the table, - and so on). After the tables of percentages, we also present our results for larger disparities for the regional breakdowns.

		2017									
		Integration Disorder		Learning Disorder – writing difficulty		Behavioral Disorder		Learning Disorder – reading difficulty		Learning Disorder – calculating difficulty	
		no	yes	no	yes	no	yes	no	yes	no	yes
Grade	6.	34,01%	0,43%	31,73%	2,71%	34,10%	0,35%	31,89%	2,56%	32,50%	1,94%
	8.	32,81%	0,27%	30,85%	2,23%	32,86%	0,22%	31,05%	2,03%	31,45%	1,63%
	10.	32,36%	0,12%	31,62%	0,86%	32,42%	0,07%	31,86%	0,62%	31,79%	0,69%
	Primary school	61,75%	0,69%	57,58%	4,86%	61,88%	0,56%	57,90%	4,54%	58,90%	3,54%
	8 grade high school	4,24%	0,01%	4,18%	0,07%	4,24%	0,00%	4,21%	0,03%	4,22%	0,03%
	6 grade hihg school	3,89%	0,00%	3,84%	0,06%	3,89%	0,00%	3,86%	0,03%	3,87%	0,02%
	4 grade high school	11,67%	0,02%	11,51%	0,19%	11,68%	0,01%	11,57%	0,12%	11,53%	0,17%
	secondary school	11,72%	0,05%	11,43%	0,34%	11,74%	0,03%	11,53%	0,24%	11,49%	0,28%
	technical college	5,87%	0,05%	5,63%	0,29%	5,90%	0,02%	5,68%	0,24%	5,69%	0,23%
	vocational school	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%
Region	Budapest	17,72%	0,13%	16,84%	1,01%	17,76%	0,10%	16,93%	0,92%	17,05%	0,81%
	Central Hungary	11,62%	0,06%	10,85%	0,83%	11,64%	0,04%	10,97%	0,71%	11,21%	0,47%
	Central-Dunántúl	10,36%	0,13%	9,78%	0,71%	10,40%	0,09%	9,89%	0,59%	10,04%	0,45%
	West-Dunántúl	9,58%	0,05%	9,21%	0,42%	9,59%	0,05%	9,27%	0,37%	9,39%	0,25%
	SouthDunántúl	8,76%	0,07%	8,15%	0,68%	8,79%	0,05%	8,25%	0,59%	8,34%	0,49%
	Nord-Hungary	12,18%	0,11%	11,68%	0,62%	12,19%	0,10%	11,67%	0,62%	11,72%	0,58%
	Nord-Alföld	16,59%	0,17%	15,95%	0,81%	16,62%	0,14%	16,03%	0,73%	16,11%	0,65%
	Nord-Alföld	12,37%	0,09%	11,74%	0,72%	12,39%	0,07%	11,79%	0,67%	11,88%	0,57%

		2017									
		Integration Disorder		Learning Disorder – writing difficulty		Behavioral Disorder		Learning Disorder – reading difficulty		Learning Disorder – calculating difficulty	
		no	yes	no	yes	no	yes	no	yes	no	yes
Counties	Budapest	17,72%	0,13%	16,84%	1,01%	17,76%	0,10%	16,93%	0,92%	17,05%	0,81%
	Baranya	3,54%	0,01%	3,33%	0,22%	3,54%	0,01%	3,34%	0,20%	3,39%	0,15%
	Bács-Kiskun	5,06%	0,02%	4,76%	0,31%	5,06%	0,02%	4,80%	0,28%	4,81%	0,27%
	Békés	3,41%	0,05%	3,23%	0,23%	3,42%	0,04%	3,24%	0,22%	3,28%	0,18%
	Borsod-Abaúj-Zemplén	7,09%	0,06%	6,75%	0,40%	7,08%	0,06%	6,76%	0,39%	6,78%	0,37%
	Csongrád	3,90%	0,02%	3,74%	0,17%	3,91%	0,01%	3,74%	0,17%	3,79%	0,12%
	Fejér	4,06%	0,08%	3,83%	0,30%	4,08%	0,05%	3,90%	0,23%	3,93%	0,20%
	Győr-Moson-Sopron	4,63%	0,04%	4,51%	0,16%	4,64%	0,03%	4,51%	0,16%	4,58%	0,09%
	Hajdú-Bihar	6,08%	0,09%	5,83%	0,34%	6,09%	0,08%	5,84%	0,33%	5,87%	0,30%
	Heves	3,28%	0,02%	3,14%	0,16%	3,29%	0,02%	3,14%	0,17%	3,15%	0,15%
	Jász-Nagykun-Szolnok	4,13%	0,03%	3,88%	0,27%	4,13%	0,02%	3,91%	0,24%	3,96%	0,19%
	Komárom-Esztergom	3,01%	0,04%	2,82%	0,22%	3,02%	0,02%	2,84%	0,21%	2,90%	0,15%
	Nógrád	1,81%	0,03%	1,79%	0,06%	1,82%	0,02%	1,77%	0,07%	1,79%	0,06%
	Pest	11,62%	0,06%	10,85%	0,83%	11,64%	0,04%	10,97%	0,71%	11,21%	0,47%
	Somogy	3,01%	0,05%	2,80%	0,26%	3,03%	0,03%	2,84%	0,22%	2,86%	0,20%
	Szabolcs-Szatmár-Bereg	6,39%	0,05%	6,24%	0,20%	6,40%	0,04%	6,28%	0,16%	6,28%	0,16%
	Tolna	2,22%	0,01%	2,03%	0,20%	2,22%	0,01%	2,06%	0,16%	2,09%	0,14%
	Vas	2,43%	0,01%	2,33%	0,10%	2,43%	0,01%	2,35%	0,08%	2,39%	0,04%
	Veszprém	3,29%	0,02%	3,12%	0,19%	3,30%	0,01%	3,16%	0,15%	3,21%	0,10%
	Zala	2,52%	0,01%	2,37%	0,16%	2,52%	0,01%	2,40%	0,13%	2,42%	0,11%

Table 8 BMI codes in different layer breakdowns, each layer and category considered 100% in 2017

		2018									
		Integration Disorder		Learning Disorder – writing difficulty		Behavioral Disorder		Learning Disorder – reading difficulty		Learning Disorder – calculating difficulty	
		no	yes	no	yes	no	yes	no	yes	no	yes
Grade	6.	34,62%	0,47%	32,28%	2,81%	34,69%	0,40%	32,38%	2,71%	33,07%	2,02%
	8.	32,56%	0,33%	30,64%	2,25%	32,64%	0,25%	30,78%	2,12%	31,17%	1,72%
	10.	31,85%	0,17%	31,02%	1,00%	31,94%	0,08%	31,31%	0,71%	31,20%	0,82%
	Primary school	62,24%	0,79%	58,05%	4,98%	62,38%	0,64%	58,25%	4,77%	59,32%	3,71%
	8 grade high school	4,13%	0,01%	4,08%	0,06%	4,14%	0,01%	4,10%	0,04%	4,12%	0,02%
	6 grade hihg school	3,75%	0,01%	3,70%	0,06%	3,76%	0,01%	3,73%	0,04%	3,74%	0,03%
	4 grade high school	11,71%	0,03%	11,52%	0,22%	11,72%	0,02%	11,61%	0,13%	11,55%	0,19%
	secondary school	11,23%	0,06%	10,92%	0,37%	11,27%	0,02%	11,03%	0,26%	10,98%	0,32%
	technical college	5,93%	0,07%	5,63%	0,36%	5,96%	0,03%	5,71%	0,29%	5,71%	0,28%
	vocational school	0,04%	0,00%	0,03%	0,00%	0,04%	0,00%	0,04%	0,00%	0,03%	0,00%
Region	Budapest	18,07%	0,19%	17,13%	1,12%	18,12%	0,13%	17,23%	1,02%	17,40%	0,85%
	Central Hungary	11,73%	0,07%	10,95%	0,85%	11,73%	0,06%	11,02%	0,77%	11,24%	0,55%
	Central-Dunántúl	10,38%	0,14%	9,77%	0,75%	10,41%	0,10%	9,84%	0,68%	10,00%	0,51%
	West-Dunántúl	9,65%	0,07%	9,30%	0,43%	9,67%	0,05%	9,32%	0,40%	9,43%	0,29%
	SouthDunántúl	8,57%	0,06%	7,97%	0,65%	8,58%	0,04%	8,07%	0,55%	8,14%	0,48%
	Nord-Hungary	12,00%	0,13%	11,48%	0,65%	12,02%	0,10%	11,50%	0,63%	11,53%	0,60%
	Nord-Alföld	16,40%	0,20%	15,72%	0,88%	16,44%	0,15%	15,83%	0,77%	15,90%	0,70%
	Nord-Alföld	12,24%	0,12%	11,63%	0,74%	12,29%	0,08%	11,66%	0,70%	11,78%	0,58%

		2018									
		Integration Disorder		Learning Disorder – writing difficulty		Behavioral Disorder		Learning Disorder – reading difficulty		Learning Disorder – calculating difficulty	
		no	yes	no	yes	no	yes	no	yes	no	yes
Counies	Budapest	18,07%	0,19%	17,13%	1,12%	18,12%	0,13%	17,23%	1,02%	17,40%	0,85%
	Baranya	3,44%	0,02%	3,24%	0,22%	3,45%	0,01%	3,25%	0,21%	3,30%	0,16%
	Bács-Kiskun	4,99%	0,03%	4,71%	0,31%	5,00%	0,01%	4,72%	0,30%	4,75%	0,27%
	Békés	3,38%	0,08%	3,24%	0,22%	3,41%	0,04%	3,26%	0,20%	3,29%	0,17%
	Borsod-Abaúj-Zemplén	6,98%	0,06%	6,61%	0,43%	6,99%	0,05%	6,64%	0,40%	6,67%	0,38%
	Csongrád	3,88%	0,01%	3,68%	0,21%	3,87%	0,02%	3,69%	0,20%	3,74%	0,15%
	Fejér	4,10%	0,07%	3,86%	0,31%	4,12%	0,05%	3,89%	0,28%	3,94%	0,23%
	Győr-Moson-Sopron	4,74%	0,04%	4,61%	0,17%	4,75%	0,03%	4,60%	0,18%	4,66%	0,12%
	Hajdú-Bihar	5,96%	0,12%	5,69%	0,39%	5,98%	0,09%	5,69%	0,39%	5,74%	0,34%
	Heves	3,25%	0,04%	3,13%	0,16%	3,26%	0,03%	3,12%	0,17%	3,13%	0,16%
	Jász-Nagykun-Szolnok	4,00%	0,02%	3,73%	0,30%	4,01%	0,01%	3,78%	0,24%	3,82%	0,20%
	Komárom-Esztergom	3,10%	0,04%	2,90%	0,23%	3,10%	0,04%	2,92%	0,22%	2,96%	0,17%
	Nógrád	1,76%	0,03%	1,74%	0,05%	1,77%	0,02%	1,73%	0,07%	1,74%	0,06%
	Pest	11,73%	0,07%	10,95%	0,85%	11,73%	0,06%	11,02%	0,77%	11,24%	0,55%
	Somogy	2,96%	0,03%	2,75%	0,23%	2,96%	0,02%	2,79%	0,20%	2,81%	0,18%
	Szabolcs-Szatmár-Bereg	6,44%	0,06%	6,30%	0,19%	6,45%	0,05%	6,36%	0,14%	6,34%	0,16%
	Tolna	2,17%	0,01%	1,98%	0,19%	2,17%	0,01%	2,03%	0,15%	2,03%	0,14%
	Vas	2,37%	0,00%	2,29%	0,09%	2,37%	0,00%	2,30%	0,08%	2,33%	0,04%
	Veszprém	3,18%	0,03%	3,01%	0,21%	3,20%	0,02%	3,04%	0,17%	3,10%	0,11%
	Zala	2,54%	0,02%	2,40%	0,17%	2,55%	0,01%	2,42%	0,14%	2,44%	0,12%

Table 9 BMI codes in different layer breakdowns, considered 100% by layer and by category, in 2018

Regional research

Based on the county observations, it is also worth seeing that regional differences are likely to emerge.

		Integration Disporder		Behavior Disorder		Writing Difficulty		Reading Difficulty		CalcutalingDifficulty	
		ner	ige	ner	ige	ner	ige	ner	ige	ner	ige
Budapest	N	89456$_a$	803$_a$	89680$_a$	579$_a$	84917$_a$	5342$_a$	85394$_a$	4865$_a$	86108$_a$	4151$_b$
	RES	0,1	-0,1	1,5	-1,5	0,1	-0,1	-0,3	0,3	-3,0	3,0
Central Hungary	N	58354$_a$	323$_b$	58409$_a$	268$_b$	54490$_a$	4187$_b$	54969$_a$	3708$_b$	56140$_a$	2537$_a$
	RES	9,4	-9,4	7,0	-7,0	-13,2	13,2	-10,9	10,9	1,1	-1,1
Central Dunántúl	N	51828$_a$	676$_b$	52019$_a$	485$_b$	48864$_a$	3640$_b$	49326$_a$	3178$_b$	50100$_a$	2404$_b$
	RES	-10,1	10,1	-7,2	7,2	-10,3	10,3	-7,4	7,4	-2,0	2,0
West-Dunántúl	N	48079$_a$	304$_b$	48147$_a$	236$_b$	46273$_a$	2110$_b$	46459$_a$	1924$_b$	47042$_a$	1341$_b$
	RES	6,5	-6,5	5,4	-5,4	15,4	-15,4	14,3	-14,3	18,5	-18,5
South-Dunántúl	N	43309$_a$	324$_b$	43411$_a$	222$_b$	40310$_a$	3323$_b$	40794$_a$	2839$_b$	41212$_a$	2421$_b$
	RES	3,5	-3,5	4,5	-4,5	-15,6	15,6	-11,0	11,0	-12,1	12,1
North-Alföld	N	82475$_a$	913$_b$	82656$_a$	732$_b$	79160$_a$	4228$_b$	79634$_a$	3754$_b$	80014$_a$	3374$_b$
	RES	-6,8	6,8	-7,6	7,6	11,5	-11,5	12,2	-12,2	5,6	-5,6
North - Hungary	N	60437$_a$	609$_b$	60524$_a$	522$_b$	57883$_a$	3163$_b$	57912$_a$	3134$_b$	58114$_a$	2932$_b$
	RES	-2,9	2,9	-5,6	5,6	8,3	-8,3	2,7	-2,7	-5,0	5,0
South-Alföld	N	61528$_a$	515$_a$	61689$_a$	354$_b$	58403$_a$	3640$_a$	58607$_a$	3436$_b$	59154$_a$	2889$_b$
	RES	1,8	-1,8	3,5	-3,5	0,7	-0,7	-2,0	2,0	-3,2	3,2

Table 10 Regional studies I A nyilak bennemaradtak a táblában

		Integration		Writing		Reading		Calculating		Behavior	
		no	yes	no	yes	no	yes	no	yes	no	yes
Budapest	N	89456$_a$	803$_a$	84917$_a$	5342$_a$	85394$_a$	4865$_a$	86108$_a$	4151$_b$	89680$_a$	579$_a$
	RES	0,1	-0,1	0,1	-0,1	-0,3	0,3	-3,0	3,0	1,5	-1,5
Central Hungary	N	58354$_a$	323$_b$	54490$_a$	4187$_b$	54969$_a$	3708$_b$	56140$_a$	2537$_a$	58409$_a$	268$_b$
	RES	9,4	-9,4	-13,2	13,2	-10,9	10,9	1,1	-1,1	7,0	-7,0
Central Dunántúl	N	51828$_a$	676$_b$	48864$_a$	3640$_b$	49326$_a$	3178$_b$	50100$_a$	2404$_b$	52019$_a$	485$_b$
	RES	-10,1	10,1	-10,3	10,3	-7,4	7,4	-2,0	2,0	-7,2	7,2
West-Dunántúl	N	48079$_a$	304$_b$	46273$_a$	2110$_b$	46459$_a$	1924$_b$	47042$_a$	1341$_b$	48147$_a$	236$_b$
	RES	6,5	-6,5	15,4	-15,4	14,3	-14,3	18,5	-18,5	5,4	-5,4
South-Dunántúl	N	43309$_a$	324$_b$	40310$_a$	3323$_b$	40794$_a$	2839$_b$	41212$_a$	2421$_b$	43411$_a$	222$_b$
	RES	3,5	-3,5	-15,6	15,6	-11,0	11,0	-12,1	12,1	4,5	-4,5
Nord -Hungary	N	60437$_a$	609$_b$	57883$_a$	3163$_b$	57912$_a$	3134$_b$	58114$_a$	2932$_b$	60524$_a$	522$_b$
	RES	-2,9	2,9	8,3	-8,3	2,7	-2,7	-5,0	5,0	-5,6	5,6
North Lowland	N	82475$_a$	913$_b$	79160$_a$	4228$_b$	79634$_a$	3754$_b$	80014$_a$	3374$_b$	82656$_a$	732$_b$
	RES	-6,8	6,8	11,5	-11,5	12,2	-12,2	5,6	-5,6	-7,6	7,6
South -Lowland	N	61528$_a$	515$_a$	58403$_a$	3640$_a$	58607$_a$	3436$_b$	59154$_a$	2889$_b$	61689$_a$	354$_b$
	RES	1,8	-1,8	0,7	-0,7	-2,0	2,0	-3,2	3,2	3,5	-3,5

As in the case of the counties, the ones marked in white (Budapest), marked in gray (Northern Hungary and Southern Great Plain) and marked in blue (Central Hungary, Central Transdanubia, Western Transdanubia, Southern Transdanubia and Northern Great Plain).division was used. The Capital can be considered as a kind of benchmark in the sense that, due to its weight, the extent of the adjusted standardized residuals remains essentially different.

- Regions marked in gray

Both Northern Hungary and the Southern Great Plain have fallen into this category, but it is worth noting that there are mixed standardized values.

Northern Hungary in connection with this region, it can be said that, in principle, among the learning difficulties, literacy (-8.3) and reading (-2.7) have a lower proportion of learning difficulties than would be expected in independent situations, but numerical difficulties (5.0) , both integration difficulties (2.9) and behavioral difficulties (5.6) are more visible.

Southern Great Plain: this region shows much lower values in several areas, but has a higher rate of calculation difficulty (3.2), whereas behavioral difficulties show a lower rate (-3.5).

- Regions marked in blue

In the case of regions marked in blue, the differences are larger (standard values represent at least 10), so the difference is more significant than expected in the independent case.

Central Hungary: In the case of this region (differentiated from Budapest), writing (13.2) and reading (10.9) difficulties are very significant compared to other areas.

Central Transdanubia: they show higher values for essentially all difficulties, of which the difficulty of integration (10.1) and the difficulty of writing (10.3) are particularly prominent.

Western Transdanubia and Southern Transdanubia: these two regions can be considered as opposites in terms of extreme displacements, as the former have lower learning difficulties (writing -15.4; reading -14.3; numerical -18.5) and points these difficulties are significantly higher (writing 15.6; reading 11.0; calculating 12.1) than in the independent case.

Northern Great Plain: This region has lower rates of writing difficulty (-11.5) and reading difficulty (-12.2) compared to the independent case. However, it is also worth noting that although not in the order of 10, integration (6.8) and behavioral difficulties (7.6) are higher.

All in all, it is the same as in the counties: we cannot say typical, general, national movements - not least because there are obviously large differences between counties / regions in the dynamics of BTM categories, their movement, and their walk together. Therefore, it may be worthwhile to start making corrections at regional level when examining SNI / BTM relationships.

		2017							
		Dyslexia		Dysgraphia		Dyscalculia		ADHD	
		no	yes	no	yes	no	yes	no	yes
Grade	6.	34,06%	0,38%	33,98%	0,46%	34,24%	0,20%	34,37%	0,07%
	8.	32,58%	0,49%	32,49%	0,58%	32,89%	0,19%	32,90%	0,17%
	10.	32,13%	0,36%	32,04%	0,44%	32,33%	0,16%	32,31%	0,18%
	Primary school	61,64%	0,80%	61,48%	0,96%	62,09%	0,35%	62,22%	0,22%
	8 grade high school	4,20%	0,05%	4,19%	0,06%	4,22%	0,03%	4,23%	0,02%
	6 grade hihg school	3,83%	0,06%	3,82%	0,07%	3,87%	0,03%	3,87%	0,02%
	4 grade high school	11,56%	0,13%	11,53%	0,16%	11,64%	0,05%	11,62%	0,07%
	secondary school	11,64%	0,13%	11,61%	0,16%	11,71%	0,06%	11,71%	0,06%
	technical college	5,86%	0,06%	5,85%	0,07%	5,89%	0,03%	5,89%	0,03%
	vocational school	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%
Region	Budapest	17,64%	0,21%	17,60%	0,25%	17,76%	0,09%	17,78%	0,08%
	Central Hungary	11,53%	0,15%	11,49%	0,19%	11,61%	0,07%	11,64%	0,04%
	Central-Dunántúl	10,37%	0,12%	10,34%	0,15%	10,43%	0,06%	10,44%	0,05%
	West-Dunántúl	9,51%	0,12%	9,49%	0,14%	9,58%	0,05%	9,60%	0,04%
	SouthDunántúl	8,72%	0,11%	8,71%	0,13%	8,79%	0,05%	8,79%	0,04%
	Nord-Hungary	12,13%	0,16%	12,11%	0,18%	12,22%	0,07%	12,24%	0,05%
	Nord-Alföld	16,56%	0,20%	16,51%	0,26%	16,68%	0,08%	16,69%	0,07%
	Nord-Alföld	12,30%	0,15%	12,27%	0,19%	12,38%	0,07%	12,40%	0,05%
Counties	Budapest	17,64%	0,21%	17,60%	0,25%	17,76%	0,09%	17,78%	0,08%
	Baranya	3,50%	0,05%	3,49%	0,06%	3,52%	0,02%	3,53%	0,02%
	Bács-Kiskun	5,01%	0,06%	5,00%	0,08%	5,06%	0,02%	5,05%	0,03%
	Békés	3,42%	0,05%	3,41%	0,06%	3,44%	0,03%	3,45%	0,01%
	Borsod-Abaúj-Zemplén	7,04%	0,10%	7,04%	0,11%	7,10%	0,04%	7,11%	0,04%
	Csongrád	3,87%	0,04%	3,86%	0,05%	3,89%	0,02%	3,90%	0,01%
	Fejér	4,09%	0,04%	4,08%	0,06%	4,11%	0,02%	4,12%	0,02%
	Győr-Moson-Sopron	4,60%	0,07%	4,59%	0,08%	4,64%	0,03%	4,65%	0,02%
	Hajdú-Bihar	6,10%	0,07%	6,08%	0,09%	6,14%	0,03%	6,14%	0,03%
	Heves	3,27%	0,04%	3,26%	0,05%	3,29%	0,02%	3,30%	0,01%
	Jász-Nagykun-Szolnok	4,09%	0,06%	4,08%	0,07%	4,13%	0,02%	4,14%	0,02%
	Komárom-Esztergom	3,01%	0,04%	3,00%	0,04%	3,03%	0,02%	3,03%	0,02%
	Nógrád	1,82%	0,02%	1,82%	0,03%	1,83%	0,01%	1,84%	0,01%
	Pest	11,53%	0,15%	11,49%	0,19%	11,61%	0,07%	11,64%	0,04%
	Somogy	3,03%	0,04%	3,02%	0,04%	3,05%	0,02%	3,05%	0,01%
	Szaboles-Szatmár-Bereg	6,36%	0,08%	6,34%	0,10%	6,41%	0,03%	6,41%	0,03%
	Tolna	2,20%	0,03%	2,20%	0,03%	2,22%	0,01%	2,22%	0,01%
	Vas	2,41%	0,03%	2,40%	0,03%	2,42%	0,01%	2,42%	0,01%
	Veszprém	3,27%	0,04%	3,26%	0,05%	3,29%	0,02%	3,29%	0,01%
	Zala	2,50%	0,03%	2,50%	0,03%	2,52%	0,02%	2,52%	0,01%

Table 12 Breakdown of SNI codes by county, region, type of school and grade, 2017

		2018							
		Dyslexia		Dysgraphia		Dyscalculia		ADHD	
		no	yes	no	yes	no	yes	no	yes
Grade	6.	34,71%	0,37%	34,64%	0,45%	34,89%	0,20%	35,01%	0,08%
	8.	32,45%	0,44%	32,38%	0,51%	32,70%	0,19%	32,72%	0,18%
	10.	31,63%	0,39%	31,56%	0,46%	31,85%	0,17%	31,81%	0,21%
	Primary school	62,26%	0,76%	62,13%	0,89%	62,66%	0,37%	62,79%	0,23%
	8 grade high school	4,10%	0,04%	4,09%	0,05%	4,12%	0,02%	4,12%	0,02%
	6 grade hihg school	3,71%	0,05%	3,70%	0,06%	3,74%	0,02%	3,74%	0,02%
	4 grade high school	11,59%	0,15%	11,57%	0,17%	11,67%	0,07%	11,67%	0,07%
	secondary school	11,16%	0,13%	11,14%	0,16%	11,24%	0,05%	11,22%	0,08%
	technical college	5,93%	0,07%	5,91%	0,09%	5,96%	0,03%	5,95%	0,05%
	vocational school	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%	0,04%	0,00%
Region	Budapest	18,04%	0,21%	18,00%	0,25%	18,16%	0,10%	18,18%	0,08%
	Central Hungary	11,66%	0,14%	11,62%	0,17%	11,74%	0,06%	11,74%	0,05%
	Central-Dunántúl	10,38%	0,13%	10,36%	0,15%	10,45%	0,07%	10,47%	0,05%
	West-Dunántúl	9,61%	0,11%	9,59%	0,13%	9,67%	0,06%	9,68%	0,05%
	SouthDunántúl	8,52%	0,11%	8,49%	0,13%	8,58%	0,04%	8,58%	0,04%
	Nord-Hungary	11,97%	0,16%	11,96%	0,17%	12,05%	0,08%	12,07%	0,06%
	Nord-Alföld	16,40%	0,20%	16,36%	0,23%	16,51%	0,09%	16,51%	0,08%
	Nord-Alföld	12,22%	0,15%	12,19%	0,17%	12,30%	0,07%	12,30%	0,06%
Counties	Budapest	18,04%	0,21%	18,00%	0,25%	18,16%	0,10%	18,18%	0,08%
	Baranya	3,42%	0,04%	3,42%	0,05%	3,45%	0,02%	3,45%	0,02%
	Bács-Kiskun	4,96%	0,06%	4,95%	0,07%	5,00%	0,02%	4,99%	0,03%
	Békés	3,41%	0,05%	3,41%	0,05%	3,44%	0,02%	3,44%	0,02%
	Borsod-Abaúj-Zemplén	6,95%	0,09%	6,94%	0,10%	6,99%	0,05%	7,01%	0,03%
	Csongrád	3,85%	0,04%	3,83%	0,06%	3,86%	0,03%	3,87%	0,02%
	Fejér	4,12%	0,05%	4,11%	0,06%	4,15%	0,02%	4,15%	0,02%
	Győr-Moson-Sopron	4,73%	0,05%	4,72%	0,06%	4,75%	0,03%	4,76%	0,02%
	Hajdú-Bihar	6,00%	0,07%	5,99%	0,09%	6,04%	0,04%	6,05%	0,03%
	Heves	3,25%	0,04%	3,24%	0,05%	3,27%	0,02%	3,27%	0,02%
	Jász-Nagykun-Szolnok	3,97%	0,05%	3,97%	0,06%	4,00%	0,02%	4,00%	0,02%
	Komárom-Esztergom	3,10%	0,04%	3,10%	0,04%	3,12%	0,02%	3,12%	0,01%
	Nógrád	1,77%	0,03%	1,77%	0,03%	1,79%	0,01%	1,79%	0,01%
	Pest	11,66%	0,14%	11,62%	0,17%	11,74%	0,06%	11,74%	0,05%
	Somogy	2,95%	0,04%	2,94%	0,05%	2,97%	0,01%	2,97%	0,02%
	Szabolcs-Szatmár-Bereg	6,42%	0,07%	6,41%	0,09%	6,46%	0,03%	6,46%	0,03%
	Tolna	2,15%	0,03%	2,14%	0,03%	2,16%	0,01%	2,16%	0,01%
	Vas	2,34%	0,03%	2,34%	0,04%	2,36%	0,01%	2,37%	0,01%
	Veszprém	3,16%	0,05%	3,16%	0,05%	3,19%	0,02%	3,20%	0,01%
	Zala	2,54%	0,02%	2,53%	0,03%	2,55%	0,01%	2,55%	0,01%

Table 13 Breakdown of SNI codes by county, region, school type and grade in 2018

		ADHD			
2018, grade 6		no	yes	Percentage distribution within ADHD	Sum
Dysgraphia	no	88659	3126	69,84%	91785
		164,7	-164,7		
	yes	0	1350	**30,16%**	1350
		-164,7	164,7		
Sum		88659	4476		93135

		ADHD			
2018, grade 8		no	yes	Percentage distribution within ADHD	Sum
Dysgraphia	no	83217	2915	67,56%	86132
		165,6	-165,6		
	yes	0	1400	**32,44%**	1400
		-165,6	165,6		
Sum		83217	4315		87532

		ADHD			
2018- grade 10		no	yes	Percentage distribution within ADHD	Sum
Dysgraphia	no	80717	2104	66,94%	82821
		164,4	-164,4		
	yes	0	1039	**33,06%**	1039
		-164,4	164,4		
Sum		80717	3143		83860

Table 14 Grade 6, 8, 10 dysgraphia and comorbidity of ADHD

Descriptive description of SNI categories

Similarly, we present the differences in the SNI categories. It is important to emphasize (as it will be seen from the proportions), in the case of these categories, the case numbers do not allow us to carry out deeper layer analyzes or differences. Because the sample size of the overall sample is high, the incidence of SNI categories within it is low and the numbers are negligible compared to them. Therefore, only the presentation of the ratios and their descriptive description are considered acceptable here.

DISCUSSION

The county-level analysis of the prevalence rates of students with learning disability, attitudes and learning has confirmed the hypothesis that the national levels are not the same - in fact, significant differences will be found. At the same time, the idea that if one ratio is higher in one region, other ratios will be higher there, has not been proved. Considering the prevalence rates in Budapest, several counties showed significant differences. In Békés County the rate of integration difficulties is significantly higher, in Fejér County and in Hajdú-Bihar County the proportion of people with integration difficulties and behavioral difficulties is higher. The proportion of people with literacy difficulties is higher in Tolna County, the proportion of people with reading and writing difficulties in Pest County and the number of people with reading, writing and numeracy difficulties in Somogy County. In contrast, the proportion of people with reading difficulties is lower in Nógrád County, the share of people with reading and numerating difficulties is lower in Vas County, and the proportion of people with reading, writing and numeracy difficulties in Győr-Moson-Sopron and Szabolcs-Szatmár-Bereg Counties is lower compared to other counties. These results do not follow that idea that there are fewer BTM children in richer counties and fewer in poorer counties, so it is also a question of what caused these results. One possible explanation could be the circumstance of transmitting BTM codes. Diagnostic criteria are uniform throughout the country. The tests are carried out by professionals using standardized measuring tools for students who are sent to the institution by teachers or parents. One explanation for the difference may be that what they are sensitive to at school is what causes them to seek help at a level. Modern and less modern procedures are used for measuring instruments. More sophisticated measuring devices are more sensitive to measuring and articulating the problem. This partly explains the differences in proportions, but the explanation for the opposite results is yet to come (the authors raised the possibility of or-or thinking in identifying problems instead of also-is).

In line with international results (Lewandowski, Hendricks, Gordon, 2015), we also demonstrated in this year's Hungarian sample that school performance of students with SEN and BTM lags behind that of non-SEN and non-SEN students. Vulnerable factors include poor performance expectations (both parent and school) and school failure, which increases the risk of dropping out of the school system. Figures 2 and 3 presenting the results of this survey illustrate the percentage of BTM students in the national sample. The dropping out of school in BTM enrollment rate among 10th grade students is striking, which is explained by the absence of other data in the school, which may be influenced by the lack of effective management of BMT problems (eg lack of specialist staff is a known problem in the field).

In the National Assessment of Basic Competences comparing students with SEN and BTM and non-SEN and non-SEN students, the 2018 data do not show a significant difference compared to the measurement a year before, which is not surprising. On one hand, no complex program has been launched in the past year to help students with BMI and ADHD with SNI, based on the proposed complex treatment. The first

step has been taken; we have assessed the scale of the problem and determined the local specifics based on the available data, so the authors consider it appropriate to develop a comprehensive program based on the results. Detecting regional disparities is thus of paramount importance, as regions with a higher incidence of these children need to invest more energy in reducing the gap between them.

Obviously, this is especially true for children with SEN, and for them, avoiding school drop-out is an important task.

In the case of different disabilities different developmental programs can help, psychological and psycho-pedagogical methods can be effective in the case of integration and behavioral disorders. Children with SEN and BTM need special treatment at school, requiring special education assistants, developmental teachers, special education teachers, speech therapists and psychologists. This is required by law in Hungary (Public Education Act 2011 CXC. § 27). These children receive special developments on a weekly basis according to the nature of the problem.

In addition, they can be helped during regular classes. For example, when teaching BTM SNI to ADHD children, it is recommended to use an activity-oriented pedagogical environment, the use of cooperative techniques, and the use of a teaching assistant to help students with difficulties in their classroom work. It would be important to have the BTM SNI ADHD child sitting in the front bench, away from noise sources, with only the necessary materials in the child's field of vision. It is important to establish and adhere to a precise daily schedule, to explain clear and brief rules frequently, to consistently enforce them, and to link them to specific consequences. It is also important to ensure success and immediate reinforcement. Multiple aspects of the curriculum can be illustrated and approached, ensuring the variety and novelty of the tasks in the lesson can help. It is worth breaking down the longer tasks into small steps so that the child can take a break between the steps. In the light of the current research findings and the high incidence and comorbidity of dysgraphia, the appropriate technical tools (laptops, word-processing software, etc.) and their competent use for learning prevents the drop-outs of the students concerned. However, it is advisable to adjust the difficulty level of the tasks to the individual level of the child, if the task exceeds their individual level, they tend to give up tasks, become frustrated and vice versa: in the case of too simple tasks, they become easily inattentive and bored. The feeling of boredom can become commonplace in the school environment in the long run, which implies a child being left behind and having long-term effects. In addition, it is recommended that the child with ADI with BTM SNI should be able to adjust to time limits during their work (Szabó, Vámos, 2012). Comparing BTM and SNI children with traditional and differentiated education, those with personalized education have lower levels of anxiety, higher self-esteem, lower levels of aggression, and lower levels of envy (Ilyés, 2008).

Current national findings suggest that addressing the school situation of children and adolescents with BTM and SNI is an urgent and relevant task at the national level, as analyzing the data presented generally suggests that where their presence is significant, their results in the National Assessment of Basic Competences lag behind those of the peers who do not have such a diagnosis in all school types. In eight-grade high schools,

the number of young people with BTM or SNI diagnoses is so small that they do not appear in statistical calculations. So, the therapeutic interventions suggested in the previous paragraph and the conditions for the appropriate professionals (special education teacher, developmental teacher, psychologist, see below) should be created first in primary schools. By building the system, the school system can, in the long run, provide a good basis for a broader spectrum of further education for future generations. The timely recognition of known comorbid psychiatric disorders allows for a positive change in long-term quality of life. Going forward, and taking into account the characteristics of the school system and the results, there is also a need to employ the appropriate professionals to provide BTM and SNI students and maintain them in the school system.

The purpose of the study is to launch a series of several writings, the theoretical basis of which is introduced in the present study. We analyzed BTM country data, followed by processing of SNI data and presentation of ADHD data. The definition of diagnostic categories is essential for measurability and treatment. However, due to the high comorbidity rates, we can present a more nuanced picture if we discuss the problem in several steps. In the introduction to the present study, we have addressed the issue of dysgraphia and its association with ADHD and ASD. Measurements showed very high comorbidity (63% and 60%), which highlights the importance of treating dysgraphia. In children with ADHD and ASD, performance in all three areas - graphomotor, attention, speed of performance - was lower, and it was shown that the problem did not decrease with age. Symptoms are associated with inadequate school performance and have been linked to psychosocial factors (self-esteem, anxiety, mood elements) and school opposition disorder. In the long run, lagging school performance will reduce and narrow the chances of finding a job. Lower IQ performance was associated with poor graphomotor performance of 92%. Studies have shown that providing proper development and tools, and learning how to use the device significantly improves the readability of handwriting, but does not affect writing speed. Providing appropriate support (detailed above) and the use of tools in primary schools will help to keep students motivated and curious and reduce these negative effects. Considering the high incidence of dysgraphia, significant results can be achieved with the above interventions among students with dysgraphia. Providing appropriate tools in the school environment and in teaching is part of the proven effective management of dysgraphia. Group of students with dysgraphia and ADHD or ASD are particularly at risk of dropping out. In their case, a complex treatment procedure (pharmacotherapy, parenting, teacher training, development teacher, psychologist) can ensure the acquisition of school knowledge with results similar to those of their typically developing counterparts and to prevent backlogs. Maintaining the motivation to learn is a long-term investment in early school years. As we discussed earlier, the role of the family and accurate information from parents has been mentioned as a treatment aspect in previous studies. It is recommended the family and the school to harmonize a system of similar expectations and coordination of tools to deal with the problem on a day-to-day basis, with appropriate developmental and technical tools from the early school age. Teachers can support learners by supporting individual treatment, increased attention and positive reinforcement, and

the use of appropriate activity-based, cooperative approaches. In our view, we have given a comprehensive picture of the course of a very wide range of problems, of comorbidity and of possible outcomes. Addressing the problem begins with effectively addressing the defaults marked with BTM. Therefore, we have dealt with the processing of these data in this study.

CONCLUSION

On the one hand, our study confirms last year's findings that children with BTM and SNI show lower school performance.

Our other main objective was to explore regional disparities. The results only partially supported our preliminary assumptions. We found regional differences, but these did not show the expected pattern. It is not true that the proportion of children with BTM is determined by the economic indicators of the county and that there are more children with BTM in the counties with lower socioeconomic status. In addition, it is not true that the BTM 5 subgroups, namely behavioral disorder, disability, reading difficulty, writing difficulty and numeracy difficulty, go hand in hand. It is also a question of how uniform the diagnostic procedure is throughout the country.

Our results provide an accurate county-wide picture of the incidence of BTM, SNI, and ADHD, and the comorbidity of dysgraphia and ADHD at a national level, enabling data to be planned and implemented by practitioners. We hope that the international procedures presented in this study will be taken into account when developing a comprehensive school development plan.

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