

RESULTS OF THE 2017 NATIONAL ASSESSMENT OF BASIC COMPETENCIES (NABC) –AMONGST 6TH 8TH AND 10TH GRADE PUPILS DIAGNOSED WITH SEN AND BTM DISORDER

Kovács Dóra¹, Kövesdi Andrea¹, Harsányi Szabolcs Gergő¹, Koltói Lilla¹,
Nagybányai-Nagy Olivér¹, Nyitrai Erika¹, Pulai-Kottlár Gabriella²,
Simon Gabriella¹, Smohai Máté¹, Takács Nándor¹, Takács Szabolcs¹

Corresponding authors: Dóra Kovács (kovacs.dora@kre.hu),
Andrea Kövesdi (kovesdi.andrea@kre.hu)

Abstract

The aim of the study is to present the results of the 2017 National Assessment of Basic Competencies (NABC), in view of pupils with Integration, Learning and Behavioral disorder (BTM) and a group of pupils with Special Educational Need (SEN). The Authors present the groups of BTM and SEN, as well as the short and long term consequences of belonging to these groups. They then present their prevalence rates in the sample and the performance of these children in the National Assessment of Basic Competencies (NABC). The results are presented by age group, gender and school type. It can be seen that the performance of SEN and BTM children may require a more complex analysis, as their relative error (due to lower case numbers) is higher for the students in these categories. The difference between school types is well illustrated, ie, the stronger the learning expectation in the given school type, the greater the backlog of SEN and BTM children.

Keywords: Specail Educational Need ▪ ADHD ▪ dyslexia ▪ Integration, Learning and Behavioral disorder

INTRODUCTION

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 their integration into the

¹ Károli Gáspár University of the Reformed Church in Hungary, Institute of Psychology, Budapest, 1034, Bécsi út 324.

² Eötvös Loránd University, Institute of Psychology, Budapest, 1064, Izabella Street 46.

community, and/or development in their 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).

Our study was based on the results of those students who completed the National Assessment of Basic Competencies (NABC), those who were exempt from the measurement are not considered in the study.

Thus, this study have 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. Comparing inland and international patterns it is more difficult because of the fact that terminology and classification systems differ from one country to another (Fejes & Szenczi, 2010), even the inland results are not homogenous (Csépe 2007).

In the next section, the relevant terms are briefly explained

Integration disorder (BTM-B): Disorders of integration and behavior occur when a child finds it difficult or can not adapt to the values and rules of the group. Integration and behavioral disorders – can also be forms of learning problems – especially of those with partial disability (Hanuska, 2001).

The devevelopment of *behavioral disorder* (BTM-M) is caused by underdeveloped or inadequate social skills and social disability. These children are usually characterized by inhibitory, anxious or aggressive behavior (Hanuska, 2001).

Severe form of integration and behavior disorder is the opposition disorder in childhood. 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. Behavioral disorders can be associated with depressive symptoms in childhood, the combination of these two disorders in girls can cause particularly serious learning and social problems (Poirier, Déry, Toupin et al., 2015). As a result of a representative research inland on the vulnerable and protective factors of drug use, the authors suggest targeted involvement in prevention programs of a group of young people at risk of deviant behavior (Grezsa et al., 2015; Kövi et al., 2016; Grezsa & Surányi, 2014). The lack of

regulation of behavior is inextricably linked to the quality of emotional control. Emotional control deficits are relevant to certain forms of external behavior (Mullin & Hinshaw, 2007).

Dyslexia: Dyslexia is a disorder of language, speech, and learning reading. Its main symptom is the lack of reading ability from the level expected by age, education and intelligence. Borda-Fazekas and D. Molnár (2012) compared the reading comprehension of 3rd and 4th grade dyslexic students and of those who develop typically. An imaging system test confirmed anatomical differences with unknown functional consequences, and it is not clear whether the differences are the cause or the effect of dyslexia (Giraldo-Chica & Schneider, 2018). Carrion-Castillo et al. (2013), referring to the genetic determination of dyslexia, investigated the anatomical formulas, highlighting the special excitation of the neural network and axons in dyslexic children based on their results. Ignoring the stimulus was typical in the early school age for both girls and boys however girls clearly scored higher than the boys (Parhiala et al., 2014). Compared to the control group, Dyslexic children have different reaction to the negative facial expression – weaker posture and higher pressure strength. The authors explain the difference with lower performance of emotion recognition and different visual strategies (Goulême, Gerard & Bucci, 2017).

Other research explain dyslexia with impairments in auditory processing, including lower sensitivity to the rhythmic parameters underlying speech rhythm (Surányi és mtsai., 2009). Dyslexic learners have reading comprehension problems due to slow and inaccurate word reading or difficulty of decoding (Snowling, 2013). While analysing the cognitive profile of 8 and 12 year old dyslexic children and non-dyslexic children (WISC-III), lower verbal Index for Dyslexic Students (except Glossary) and Processing Speed have been noted (Moura, Simões & Pereira, 2013). Dyslexic children often perform poorly in mathematical exercises as understanding the text tasks, writing the data, and creating a text answer can all be difficult for them (Czenner, 2015). In a comparative study of multimedia learning, the authors found the auditory and hearing aids of dyslexic students more effective than reading text (Knoop-van Campen, Segers & Verhoeven, 2018).

The complex developmental-neuropsychological assessment of children is of high importance, for which widely used neuropsychological test batteries can be applied, e.g. NEPSY (Csépe, Honbolygó, & Surányi, 2006).

Students with dyslexia may have other psychological problems due to persistent failures and underperformance in addition to school difficulties. Knivsberg and Andreassen (2008) found more emotional, behavioral and attentive problems with dyslexic children. According to a study conducted in England on this subject, education in the field of biological, cognitive and behavioral aspects of dyslexia is essential in teacher training in order to overcome misconceptions

and ensure that teachers are more aware and informed about dyslexia (Knigh, 2018; Ise et al., 2010).

Dysgraphia: Disorder of writing is called dysgraphia. It can be associated with dyslexia, but it can also occur independently, either as a mild form of aggravation, as a result of brain injury or due to poor movement coordination. For example, in the case of dictation, students with this disorder make a lot of mistakes (Ellis, 1982), of course, along with many other syndromes.

Dyscalculia: Children with dyscalculia (and usually SEN) participate in the National Assessment of Basic Competencies (NABC), their textbooks are evaluated, but their results do not count in the results of the school. Dyscalculia refers to the inherited or innate affinity of the brain substrate of 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). The first refers to the damaging development of cerebral mechanisms for processing numerical data, while the second refers to the external environment, such as the inadequate teaching method, lower social and economic status, behavioral problems, or mathematical deficits resulting from general cognitive deficits (Price & Ansari, 2013). Examination has shown that 7 and 10 year old students with discalculia disorder have succeeded in acquiring the basic concepts of mathematical learning with the help of the Catch Up Numeracy program and their success has also increased their self-esteem (Zerafa, 2015).

Attention Deficit and Hyperactivity Disorder (ADHD) is a symptom of inattention, hyperactivity, and impulsivity in 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 a study conducted in 2000, ADHD affects 3 to 7% of school-age children (APA, 2000), but at the same time, a 2015 study involving a higher number of 7587 children with teachers and parents as well, found as high as 15.5%. In population studies the boy-girl ratio was found to be 3: 1, while fewer girls were found seeing the doctors with ADHD and its complications (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). Previous studies do not support the hypothesis that the proportion of men among ADHD affected brothers and sisters has risen (Mouridsen, Rich & Isager, 2016). CT examinations showed differences in the right hemisphere. Decreased CT was primarily found in the frontal parietal region while increased CT in the occipital lobe. Differences in the CT scan correlated with the severity of ADHD. Analysis of gender differences showed that the location, number and size of CT differences were different for men and women in all age groups. Anatomical abnormalities in ADHD indicate abnormal development, rather than delayed development, (Montes et Al., 2012).

Due to the symptoms of ADHD, it also causes confusion in behavior, social competences and school performance (Sciutto et Al, 2000). 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 often suffer from behavioral disorders (Harada et al., 2009). In their study conducted in 2009, among children with behavioral disorder they found 45.6% with comorbid ADHD. It seems that these disturbances often appear not in isolation but overlap. Kallitsoglou, 2013, also found that children with reading and behavioral disorders parallel showed significantly more distractions and hyperactivity symptoms. Children with ADHD are less popular at school and have fewer friends (Nijmeijer et al., 2008), which has also affects on the quality of self development and self integration. Adolescents with combined type of ADHD (ADHD CT) can make less distinction between positive and negative emotional expressions than their non-ADHD counterparts. Adolescents treated with ADHD-CT showed greater variability in response time and evaluation of facial expressions (Dan & Raz, 2015). According to another facial and emotional recognition research result suggests that children with ADHD spend less time viewing emotionally relevant image areas and respond longer than control group members (Serrano, Owens & Hallowell, 2015). Adolescents struggling with ADHD have been found to learn less about risk-avoiding decision-making than their non-ADHD affected peers (Medrano, Flores-Lázaro & Nicolini, 2015).

The symptoms of antisocial personality disorder of fathers affect the behavioral problems of children aged 5 to 12 years (ADHD), and as the authors' suggest, during the examination of relationships of childhood, associated adult psychopathology (ADHD), and conditions of childbirth should also be taken into account in childhood (LeMoine et al., 2015). By analyzing the personality of children and their parents, coexistence has been confirmed for ADHD (Yurumer et al., 2014). According to the study of ADHD subtypes, mothers of children diagnosed with hyperactivity and impulsivity (ADHD / HI, C) have been identified with significantly greater parental stress and negative parental treatment than

of mothers of kids with attentional disorder ADHD (ADHD/I). The authors suggest that the treatment of children has to be combined with training of their parents as well (Weinberger, Gardner & Gerdes, 2015).

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). In the process of development, self-esteem is shaped by life experiences. From the point of view of the child's self-esteem it is important to help developing the variability of the parents' responsiveness during the treatment (Kurman, et al., 2015). It has been shown that the abuse of children with ADHD is more related to parental factors than to the symptoms of children of ADHD (Gul & Gurkan, 2016). 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).

OCCURRENCE IN OUR SAMPLE

From the data of the National Assessment of Basic Competencies (NABC) 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 the 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	1242	2,81%	2475	5,41%	3717	4,13%
8	1223	2,85%	2347	5,40%	3570	4,14%
10	814	2,03%	1712	3,99%	2526	3,01%

Table 1: The proportion of girls and boys with SEN involved in 2017 National Assessment of Basic Competencies (NABC) 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	386 0,89%	688 1,59%	1074 1,24%
8	267 0,61%	407 0,99%	664 0,80%
10	136 0,34%	170 0,41%	306 0,37%

Table 2: The proportion of girls and boys with BTM-B involved in 2017 National Assessment of Basic Competencies (NABC) 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	232 0,54%	633 1,46%	865 1,00%
8	161 0,38%	382 0,93%	543 0,66%
10	61 0,15%	106 0,26%	167 0,21%

Table 3: The proportion of girls and boys with BTM-M involved in 2017 National Assessment of Basic Competencies (NABC) samples

PROGNOSIS

One of the main goals of our study is to analyze how children of SEN and of BTM performed in the National Assessment of Basic Competencies (NABC). Based on data of the literature we expected worse performance. 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 tend to internalize their emotions, so they develop sadness and anxiety, while boys more often externalize

their emotions, such as anger, warfare, aggression (Mano, Mano, Denton et al., 2017).

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 bingeing (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 persists 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.

RESULTS OF THIS STUDY

The primary purpose of this paper is to communicate the performance of SEN and BTM children in the 2017 National Assessment of Basic Competencies (NABC). Children of all ages can go to different types of schools in Hungary.

Due to the size of the tables and data, the exact results and figures of the tests can be obtained in a separate structure, from the website of the journal: PSYC_HU³.

The mathematical statistical methodology underlying the results is discussed in detail in the thematic edition, see (T. Kárász, 2019b) in Hungarian and (T. Kárász, 2019a) in English.

During the study, we created the groups based on the students' BTM and SEN diagnoses / official (yes-no) responses on questions.

The first six figures show the results of sixth grade children. Figure 1 shows reading comprehension results of sixth grade children with and without integration disabilities. Figure 2 shows the results in mathematics of these children. The test scores are displayed on the Y axis.

3 <http://www.kre.hu/portal/index.php/kiadvanyok/folyoiratok/psychologia-hungarica-caroliensis.html>

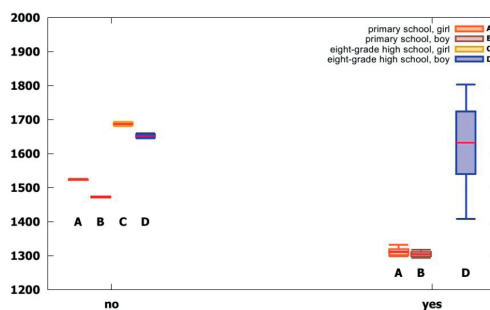


Figure No. 1: Reading comprehension results of sixth grade children with and without integration disabilities

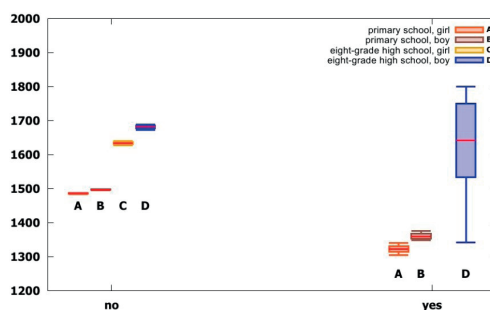


Figure No. 2: Mathematics results of sixth grade children with and without integration disabilities

Figure 3 shows reading comprehension results of sixth grade children with and without behavioral disorder, figure 4. shows the results in mathematics of these children.

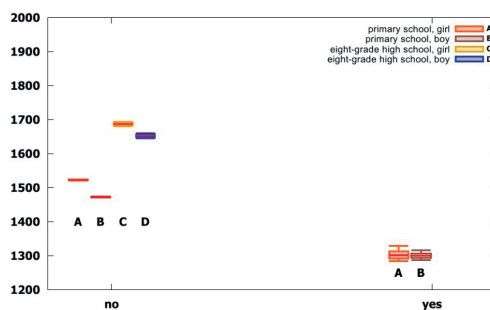


Figure No. 3: Reading comprehension results of sixth grade children with and without behavioral disorder

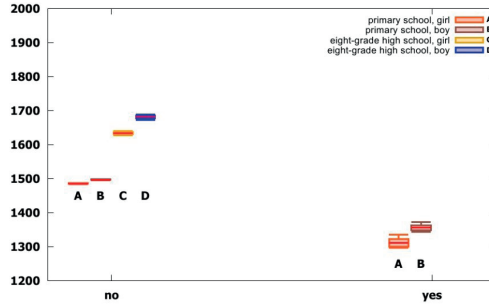


Figure No. 4: Mathematics results of sixth grade children with and without behavioral disorder

There are so few sixth grade children go to high school with BTM-M, that they do not appear on the graph.

Figure 5 shows reading comprehension results of sixth grade children with and without SEN, figure 6. shows the results in mathematics of these children

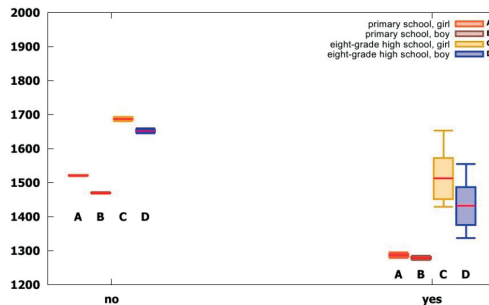


Figure No. 5: Reading comprehension results of sixth grade children with and without SEN

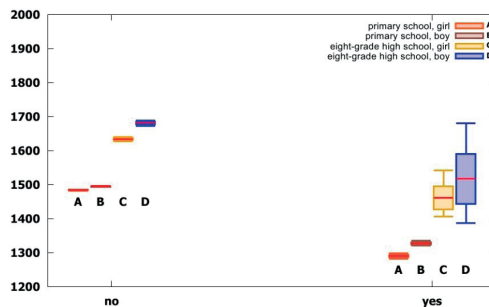


Figure No. 6: Mathematics results of sixth grade children with and without SEN

All six figures show that children with BTM or SEN are weaker in performance of reading comprehension and mathematics. Children with SEN had poorer achievement both in primary schools and in high schools .

Figures 7-12 show the results of eight grade children. Figure 7 shows reading comprehension results of eight grade children with and without integration disabilities, figure 8 shows the results in mathematics of these children.

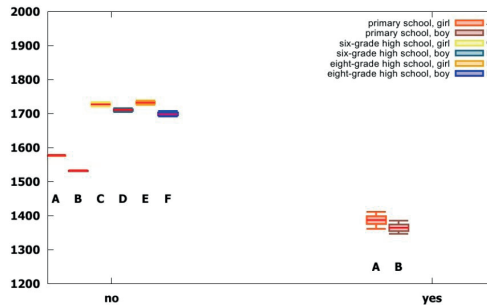


Figure No. 7: Reading comprehension results of eight grade children with and without integration disabilities

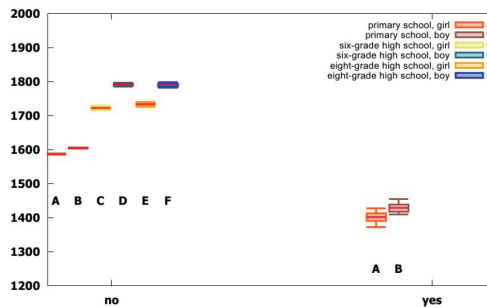


Figure No. 8: Mathematics results of eight grade children with and without integration disabilities

Figure 9 shows reading comprehension results of eight grade children with and without behavioral disorder, figure 10 shows the results in mathematics of these children.

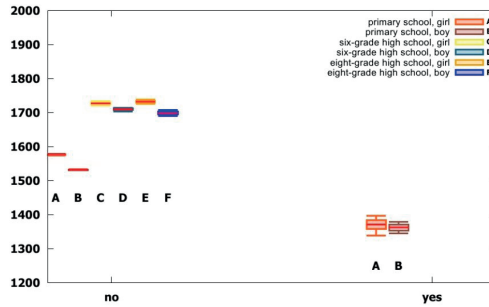


Figure No. 9: Reading comprehension results of eight grade children with and without behavioral disorder

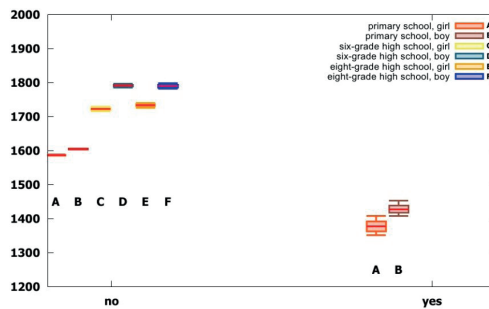


Figure No. 10: Results in mathematics of eight grade children with and without behavioral disorder

These figures also show that there are so few children with BTM-M go to high school, that they do not appear on the graph.

Children in primary school with BTM-M have weaker performance than children without BTM-M. Figure 11 shows reading comprehension results of eight grade children with and without SEN, figure 12 shows the results in mathematics of these children.

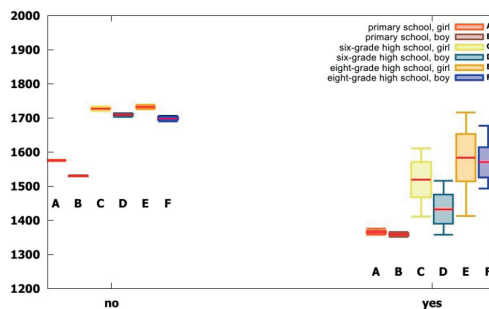


Figure No. 11: Reading comprehension results of eight grade children with and without SEN

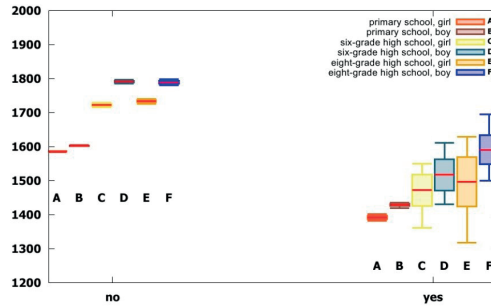


Figure No. 12: Results in mathematics of eight grade children with and without SEN

Graphs show that the greatest difference between children with and without SEN in the six-grade high school.

Figure 13-24 show results of tenth grade children. In this age group also very few BTM-M children go to eight-grade or six-grade high schools. Most of them go to four-grade high schools. Figure13 shows reading comprehension results of tenth grade boys with and without integration disabilities, figure14 shows the results in mathematics of these boys.

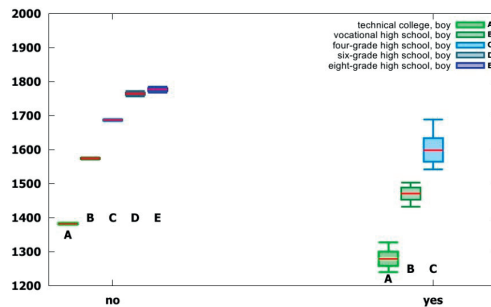


Figure No. 13: Reading comprehension results of tenth grade boys with and without integration disabilities

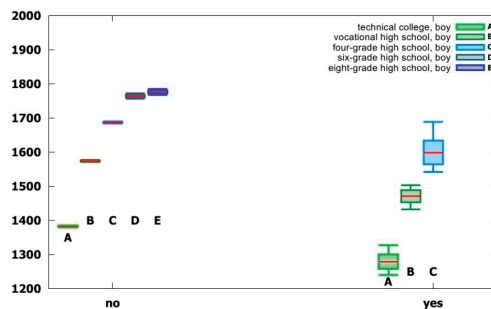


Figure No. 14: Mathematics results of tenth grade boys with and without integration disabilities

Figure 15 shows reading comprehension results of tenth grade girls with and without integration disabilities, figure16. shows the results in mathematics of these girls.

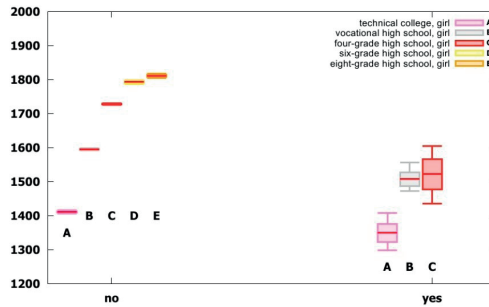


Figure No. 15: Reading comprehension results of tenth grade girls with and without integration disabilities

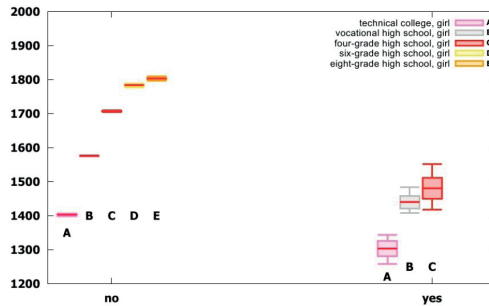


Figure No. 16: Mathematics results of tenth grade girls with and without integration disabilities

Figure 17 shows reading comprehension of tenth grade boys with and without behavioral disorder, figure 18 shows the results in mathematics of these boys.

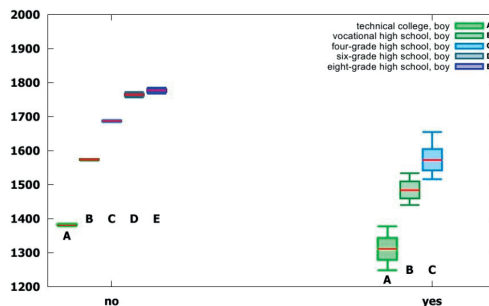


Figure No. 17: Reading comprehension of tenth grade boys with and without behavioral disorder

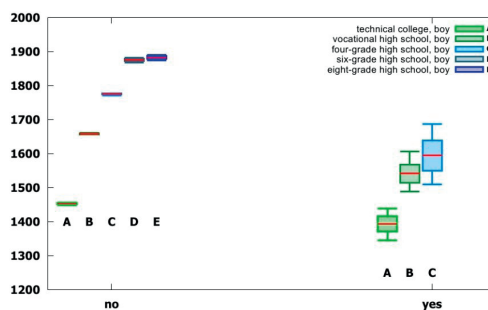


Figure No. 18: Results in mathematics of tenth grade boys with and without behavioral disorder

Figure 19 shows reading comprehension results of tenth grade boys with and without behavioral disorder, figure 20 shows the results in mathematics of these girls.

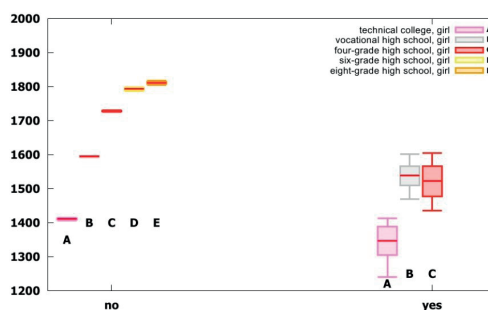


Figure No. 19: Reading comprehension results of tenth grade boys with and without behavioral disorder

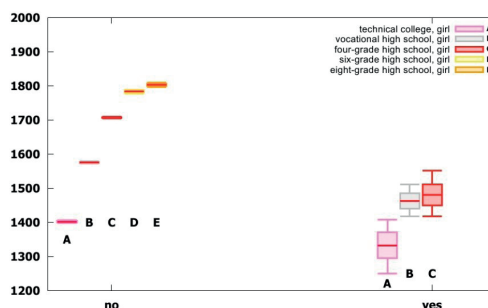


Figure No. 20: Results in mathematics of tenth grade girls with and without behavioral disorder

These figures show that girls with BTM-B have worse lagging attending to high school than to vocational high school.

Figure 21 shows reading comprehension results of tenth grade boys with and without SEN, figure 22 shows mathematics of these boys.

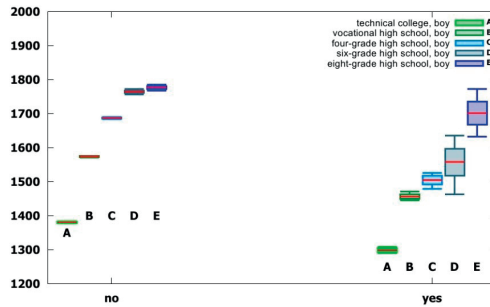


Figure No. 21: Reading comprehension results of tenth grade boys with and without SEN

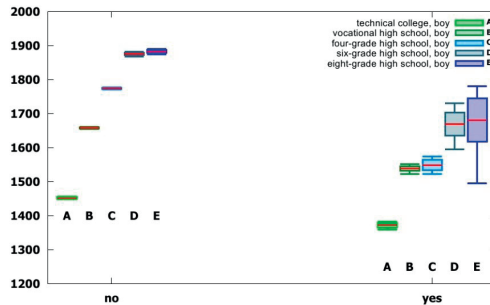


Figure No. 22: Results in mathematics of tenth grade boys with and without SEN

Graphs show that the greatest difference between boys with and without SEN in reading comprehension can be found in six-grade high school, but in both subjects boys with SEN perform much weaker.

Figure 23 shows reading comprehension results of tenth grade girls with and without SEN, figure 24 shows the results in mathematics of these girls.

Girls in six-grade high school with SEN have the worst results, and the biggest lagging behind others both in reading comprehension and in mathematics.

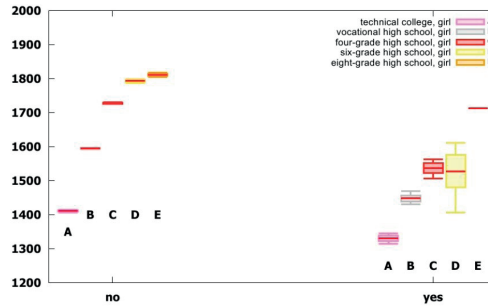


Figure No. 23: Reading comprehension results of tenth grade girls with and without SEN

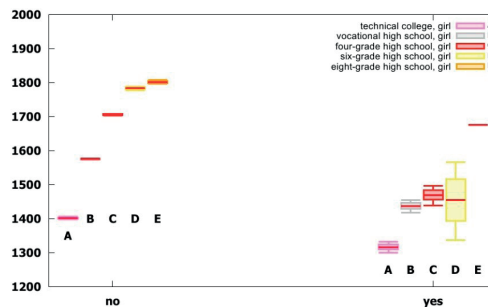


Figure No. 24: Results in mathematics of tenth grade girls with and without SEN

As the results of competence assessment shows, children with BTM or with SEN perform worse, this problem has short term negative consequences.

Sufficient treatment in schools, development, therapy if necessary, according to the results of the previous examination is very important. According to these examinations comorbide mental problems and personality development problems may come forward, which influence the performing ability, the quality of life and the well-being on a long term.

THERAPY, DEVELOPMENT, TREATMENT

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 - dietary restrictions are included in the therapeutic repertoire. The elimination of synthetic/artificial food coloring and flavor enhancers resulted in an improvement in ADHD symptoms (McCann et al. 2007, Schad & Trinh 2004). In addition, omega 3 may also be involved and recommended (Freeman et al. 2006). The effectiveness of several psychological and

psychotherapeutic methods have 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 the efficiency of these methods are 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 (Piffner & Haack 2014).

Treatment is complicated when parents themselves are also involved in ADHD. Often, their involvement is revealed while making a diagnosis of their child. Parental cooperation can significantly increase the effectiveness of treatment. Unfortunately, a parent with ADHD performs poorly in those parental functions in that his / her child with ADHD needs the most. Therefore, the routine screening of parental ADHD is important in the complex treatment of ADHD and, if necessary, adequate treatment is offered (Somogyi, Máté & Miklós, 2015). It is recommended that the time limits of the ADHD child should be adjusted to their own pace at school (Szabó & Vámos, 2012). When comparing ADHD children who receive traditional and differentiated education, the level of anxiety is lower for those who receive personalized education, self-esteem is higher, and the level of aggression and envy are lower (Ilyés, 2008).

In the future it would be useful to apply also a person-oriented approach (Surányi, Hitchcock, Hittner, Vargha, & Urbán, 2013, Kövi) to unfold what clusters (subtypes) arise among children with ADHD (or other BTM and SEN disorders). This article presents basic analyses and basic tendencies, which can provide the ground for more complex analyses.

BIBLIOGRAPHY

- American Psychiatric Association (APA) (2000) Diagnostic and statistical manual of mental disorders (4th ed., text rev.). Washington, DC.
- Andreou, E. , Didaskalou, A. & Vlachou, A. (2016) Bully/victim problems among Greek pupils with special educational needs: associations with loneliness and self-efficacy for peer interactions. *Journal of Research in Special Educational Needs*, 15(4): 235-246 <https://doi.org/10.1111/1471-3802.12028>
- Althoff, R.R., Kuny-Slock, A.V., Verhulst, F.C., Hudziak, J.J. & van der Ende, J. (2014). Classes of oppositional-defiant behavior: concurrent and predictive validity. *J.Child Psychol Psychiatry*, 55(10): 1162-71.
- Az Emberi Erőforrások Minisztériuma szakmai irányelve a hiperkinetikus zavar (figyelemhiányos/hiperaktivitás zavar) kórismézéséről, kezeléséről és gondozásáról gyermek, serdülő és felnőttkorban 2017. EüK. 3. szám közlemény 18

- Barkley, R. A. (2003). Issues in the diagnosis of attention-deficit/hyperactivity disorder in children. *Brain & Development*, 25: 77–83.
- Barkley R., A, Fischer M, Edelbrock C., S. & Smallish L. (1990). The adolescent outcome of hyperactive children diagnosed by research criteria: I An 8-year prospective follow-up study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29(4):546–557.
- Biederman, J., Mick, E., Faraone, S. V., Braaten, E., Doyle, A., Spencer, T., Wilens, T. E., Frazier, E. & Johnson, M. A. (2002) Influence of gender on attention deficit hyperactivity disorder in children referred to a psychiatric clinic. *Am J Psychiatry*, 159(1):36–42.
- Borda-Fazekas A & D. Molnár É (2012): Diszlexiás és többségi tanulók szövegértése és olvasási motivációja. In: Benedek A., Tóth P. & Vedovatti A. (szerk.): A munka és nevelés világa a tudományban. Program és összefoglalók. XII. Országos Neveléstudományi Konferencia, Budapest, 2012. november 8–10. MTA Magyar Tudományos Bizottság, Budapest. 277.
- Carrion-Castillo, A., Franke, B., & Fisher, S. E. (2013). Molecular Genetics of Dyslexia: An Overview. *Dyslexia*, 19(4): 214–240.
- Chou, W.J., Liu, T.L., Yang, P., Yen, C.F. & Hu, H.F. (2018). Bullying Victimization and Perpetration and Their Correlates in Adolescents Clinically Diagnosed With ADHD. *Journal of Attention Disorders* 22(1): 25–34. <https://doi.org/10.1177/1087054714558874>
- Czenner, J. (2015). Disz kalkulia és nyelvtanulás. *Iskolakultúra*, 25(11): 103–114.
- Csépe V. (2008). A különleges oktatást, nevelést és rehabilitációs célú fejlesztést igénylő (SNI) gyermekek ellátásának gyakorlata és a szükséges teendők. In: Fazekas K., Köllő J. & Varga J. (szerk.). *Zöld könyv a magyar közoktatás megújításáért*. Budapest, ECOSTAT, pp. 139–165.
- Csépe, V., Honbolygó F., Surányi, Zs. (2006) *Tapasztalatok a NEPSY magyar nyelvű változatával* In: Racsmany M. (szerk) A fejlődés zavarai és diagnosztikai módszerei. Akadémiai Kiadó.
- Dan, O. & Raz, S. (2015). Response Patterns to Emotional Faces Among Adolescents Diagnosed With ADHD. *Journal of Attention Disorders*, 22 (12): 1123–1130.
- Daviss, W.B. & Diler R.S. (2014). Suicidal Behaviors in Adolescents With ADHD. Associations With Depressive and Other Comorbidity, Parent–Child Conflict, Trauma Exposure, and Impairment. *Journal of Attention Disorders*, (18)8: 680–690. <https://doi.org/10.1177/1087054712451127>
- Donfrancesco, R., Di Trani M., Andriola, E. Leone, D., Torrioli, M.G., Passarelli, F. & DelBello, M.P. (2017). Bipolar Disorder in Children With ADHD: A Clinical Sample Study *Journal of Attention Disorders*, 21(9): 715–720. <https://doi.org/10.1177/1087054714539999>
- Ellis, A. W. (1982). Spelling and writing (and reading and speaking). In. Ellis AW (Ed.), *Normality and pathology in cognitive functions*, pp. 113–146. London: Academic Press.
- Evans, S.W., Owens, J. S. & Bunford, N. (2014) Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder *J Clin Child Adolesc Psychol*. 43(4):527–551.
- Fejes J., Szcenci B. (2010) Tanulási korlátok a magyar és az amerikai szakirodalomban. *Gyógypedagógiai szemle*. 38(4):273–287.
- Floet, A., M., Scheiner, C. & Grossman L. (2010). Attention-deficit/hyperactivity disorder. *Pediatr Rev.*, 31(2):56–69.

- Freeman M.P., Hibbeln J. R., Wisner K. L., Davis, J. M., Mischoulon, D., Peet M, Keck, P. E. Jr., Marangell, L. B., Richardson, A. J., Lake, J., Stoll, A. L. (2006). Omega-3 fatty acids: evidence basis for treatment and future research in psychiatry. *J Clin Psychiatry*, 67:1954–1967.
- Fried, R., Petty, C., Faraone, S. V., Hyder, L. L., Day, H. & Biederman, J. (2016). Is ADHD a Risk Factor for High School Dropout? A Controlled Study. *J Atten Disord*. 20(5): 383-389. doi: 10.1177/1087054712473180.
- Gadow, K. D., Nolan, E. E., Sprafkin, J. & Schwartz, J. (2002). Tics and psychiatric comorbidity in children and adolescents. *Dev Med Child Neurol*, 44(5):330–338.
- Giraldo-Chica, M., & Schneider, K. A. (2018). Hemispheric asymmetries in the orientation and location of the lateral geniculate nucleus in dyslexia. *Dyslexia*, 24(2): 197–203.
- Goulème, N., Gerard, C.-L., & Bucci, M. P. (2017). Postural Control in Children with Dyslexia: Effects of Emotional Stimuli in a Dual-Task Environment. *Dyslexia*, 23(3): 283–295.
- Greza, F., Mirnics, Zs., Vargha, A., Kövi, Zs., Rózsa, S., Vass, Z. & Koós, T. (2015). Iskolás- és serdülőkorúak droghasználata: kockázati és védő faktorok egy reprezentatív vizsgálat tükrében. *Mentálhigiéné és Pszichoszomatika*, 16(4): 297-329.
- Greza, F., Surányi, Zs. (2014). *Fiatalok szerhasználata. Kiadvány Szülőknek és Pedagógusoknak*. Nemzeti Család és Szociálpolitikai Intézet, Budapest. 1-91.
- Gul, H., & Gurkan, C. K. (2016). Child Maltreatment and Associated Parental Factors Among Children With ADHD. *Journal of Attention Disorders*, 22(13):1278-1288.
- Harada, Y., Hayashida, A., Hikita, S., Imai, J., Sasayama, D., Masutani, S., ... & Amano, N. (2009) Impact of behavioral/developmental disorders comorbid with conduct disorder *Psychiatry Clin Neurosci*. 63(6): 762-8. doi: 10.1111/j.1440-1819.2009.02029.x.
- Hanuska M. (2001): A magatartás – (viselkedés) – zavarok pszichopedagógiai vonatkozásai a kisiskoláskorban. *Gyógypedagógiai Szemle*, 2001. 2.
- Hinshaw, S.P., Owens, E.B., Zalecki, C., & Swanson, E.N. (2012) Prospective follow-up of girls with attention-deficit/hyperactivity disorder into early adulthood: continuing impairment includes elevated risk for suicide attempts and selfinjury. *Journal of Consulting and Clinical Psychology*, 80(6):1041–1051.
- Ilyés K. (2008). A hagyományos és a differenciált oktatásban részesülő, hiperaktivitás jelét mutató gyermekek összehasonlító vizsgálata. *Iskolakultúra*, 18(9-10): 11-22.
- Ise, E., Blomert, L., Bertrand, D., Puolakanaho, A., Saine, N., Surányi, Zs., Vaessen, A., Csépe, V., Lyytinen, H., Reis, A., Ziegler, J., & Schulte-Körne, G. (2010). Profiling poor reader support systems- empirical data from six EU-member states. *Journal of Learning Disabilities*, 44(3), 228-245.
- Kallitsoglou, A. (2013) Inattention, hyperactivity and low parental education in children with conduct problems and poor reading skills. *Journal of Research in Special Educational Needs* 14 (4): 239-247. <https://doi.org/10.1111/1471-3802.12006>
- Knight, C. (2018). What is dyslexia? An exploration of the relationship between teachers' understandings of dyslexia and their training experiences. *Dyslexia*, 24(3): 207–219.
- Knivsberg, A. M., & Andreassen, A.B. (2008) Behaviour, attention and cognition in severe dyslexia. *Nord J Psychiatry*. 62(1):59-65.

- Knoop-van Campen, C. A. N., Segers, E. & Verhoeven, L. (2018). The modality and redundancy effects in multimedia learning in children with dyslexia. *Dyslexia*, 24(2): 140–155.
- Kosc, L. (1974). Developmental Dyscalculia. *Journal of Learning Disabilities*, 7(3): 164–177.
- Kövi, Zs., Grezsa, F., Mirnics, Zs., Rózsa, S., Vargha, A., Kása, D., Koós, T., Vass, Z. (2016) *Spirituális lelki jóllét, mint szerhasználati protektív tényező* Vallás és művészet. Károli Könyvek sorozat (Sorozatszerkesztő: Sepsi E.). Budapest: L'Harmattan Kiadó.
- Köznevelési törvény 2011. CXCV. 4. §. 3 és 4. §. 25 letölthető: <https://net.jogtar.hu/jogszabaly?docid=A1100190.TV>
- Kurman, J., Rothschild-Yakar, L., Angel, R., & Katz, M. (2015). How Good Am I? Implicit and Explicit Self-Esteem as a Function of Perceived Parenting Styles Among Children With ADHD. *Journal of Attention Disorders*, 22.(13): 1207-1217.
- Lebowitz, M.S. (2016). Stigmatization of ADHD. A Developmental Review. *Journal of Attention Disorders*, 20(3):199-205. <https://doi.org/10.1177/1087054712475211>
- LeMoine, K. A., Romirowsky, A. M., Woods, K. E., & Chronis-Tuscano, A. (2015). Paternal Antisocial Behavior (But Not Paternal ADHD) Is Associated With Negative Parenting and Child Conduct Problems. *Journal of Attention Disorders*. pp. 1187-1199.
- Lewandowski, L., Hendricks, K. & Gordon, M. (2015) Test-Taking Performance of High School Students With ADHD. *Journal of Attention Disorders*, 19(1):27-34. <https://doi.org/10.1177/1087054712449183>
- Mano, Q.R., Jastrowski, Mano, K.E., Denton, C.A., Epstein, J.N. & Tamm, L. (2017). Gender Moderates Association Between Emotional-Behavioral Problems and Text Comprehension in Children with Both Reading Difficulties and Adhd. *Psychol Sch.* (5):504-518. DOI:10.1002/pits.22011
- Márkus, A., Tomasovszki, L. & Barczy, J. (2001) Diszkalkulia (Dyscalculia – DC)*és a figyelemzavar-hiperaktivitás szindróma (Attention Deficit with Hyperactivity – ADHD) *Magyar Pszichológiai Szemle*, 55(4): 567-582.
- Mayes, S. D. & Calhoun, S. L. (2006) Frequency of reading, math, and writing disabilities in children with clinical disorders. *Learning and Individual Differences*, 26:145–157.
- McCann, D., Barrett, A., Cooper A. & Stevenson, J.. (2007). Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial. *Lancet*, 370(9598):1560–1567.
- Miranda, A., Mercader, J.M., Fernández, I. & Colomer, C. (2017) Reading Performance of Young Adults With ADHD Diagnosed in Childhood Relations With Executive Functioning. *Journal of Attention Disorders*, 21(4): 294-304. <https://doi.org/10.1177/1087054713507977>
- Medrano, E., Flores-Lázaro, J. C. & Nicolini, H. (2015). Learning Process During Risk Detection in Adolescents With ADHD. *Journal of Attention Disorders*, 22 (12): 1140-1149.
- Montes A. L. G., Prado Alcántara, H., Martínez García, R. B., De La Torre, L. B., Ávila Acosta, D. & Duarte, M. G. (2012). Brain Cortical Thickness in ADHD. *Journal of Attention Disorders*, 17(8): 641–654.
- Moura, O., Simões, M. R. & Pereira, M. (2013). WISC-III Cognitive Profiles in Children with Developmental Dyslexia: Specific Cognitive Disability and Diagnostic Utility. *Dyslexia*, 20(1): 19–37.
- Mouridsen, S. E., Rich, B. & Isager, T. (2016). The Sex Ratio of Full and Half Siblings of People Diagnosed With ADHD in Childhood and Adolescence. *Journal of Attention Disorders*. 20(12): 1017–1022.

- Mullin, B. C., & Hinshaw, S. P. (2007). Emotion Regulation and Externalizing Disorders in Children and Adolescents. In J. J. Gross (Ed.), *Handbook of emotion regulation*. pp. 523-541. New York, NY, US: Guilford Press.
- Nijmeier, J. S., Mindera, R. B., Buitelaar, J. K., Mligan, A. Hartman, C. A. & Hoekstra, P. J. (2008) Attention-deficit/hyperactivity disorder and social dysfunctioning. *Clinical Psychology Review*, 28, pp. 672–708.
- Parhiala, P., Torppa, M., Eklund, K., Aro, T., Poikkeus, A.-M., Heikkilä, R., & Ahonen, T. (2014). Psychosocial Functioning of Children with and without Dyslexia: A Follow-up Study from Ages Four to Nine. *Dyslexia*, 21(3): 197–211.
- Pelham, W.E. & Jr. Fabiano, G.A. (2008). Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *J Clin Child Adolesc Psychol*, 37(1):184–214.
- Pfiffner, L. J. & Haack, L. M. (2014) Behavior Management for School Aged Children with ADHD. *Child Adolesc Psychiatr Clin N Am*, 23 (4): 731-746.
- Poirier, M., Déry, M., Temcheff, C. E., Toupin, J., Verlaan, P. & Lemelin, J. P. (2016). Longitudinal associations between conduct problems and depressive symptoms among girls and boys with early conduct problems. *Eur Child Adolesc Psychiatry*, 25(7):743-54. doi: 10.1007/s00787-015-0796-z.
- Price, Gavin R. & Ansari, D. (2013) „Dyscalculia: Characteristics, Causes, and Treatments,” *Numeracy*. 6 (1), Article 2.
- Possa, Mde. A., Spanemberg, L. & Guardiola, A. (2005) Attention-deficit hyperactivity disorder comorbidity in a school sample of children. *Arq Neuropsiquiatr*, 63(2B):479-830.
- Schab, D.W. & Trinh, N.H. (2004). Do artificial food colors promote hyperactivity in children with hyperactive syndromes? A meta-analysis of double-blind placebo-controlled trials. *J Dev Behav Pediatr*, 25:423–434. 33.
- Scituito, M. J., Terjesen, M. D. & Frank, A. S. (2000). Teacher's knowledge and misperceptions of attention deficit/hyperactivity disorder. *Psychology in the schools*, 37: 115–123.
- Selikowitz M. (2010). *ADHD a hiperaktivitás-figyelemzavar tünetegyüttes*, Geobook Szentendre, Hungary Kiadó.
- Serrano, V. J., Owens, J. S. & Hallowell, B. (2015). Where Children With ADHD Direct Visual Attention During Emotion Knowledge Tasks: Relationships to Accuracy, Response Time, and ADHD Symptoms. *Journal of Attention Disorders*, 22(8): 752–763.
- Simon V., Czobor P., Bálint S., Mészáros A. & Bitter I. (2009). Prevalence and correlates of adult attention-deficit hyperactivity disorder: meta-analysis. *Br J Psychiatry*, 194(3): 204-11.
- Somogyi K., Máté O., Miklósi M. (2015). Felnőttkori figyelemhiányos hiperaktivitás zavar és szülőség: Szakirodalmi összefoglaló. *Magyar Pszichológiai Szemle*, 70(3): 617-632.
- Steadman, K. M. & Knouse, L. E. (2016) Is the Relationship Between ADHD Symptoms and Binge Eating Mediated by Impulsivity? *Journal of Attention Disorders*, 20(11): 907-912. doi. org/10.1177/1087054714530779
- Surányi, Z., Csépe, V., Richardson, U., Thomson, J. M., Honbolygó, F., & Goswami, U. (2009). Sensitivity to rhythmic parameters in dyslexic children: A comparison of Hungarian and English. *Reading and Writing*, 22(1), 41-56.

- Surányi, Zs., Hitchcock, D. B., Hittner, J. B., Vargha, A., Urbán, R. (2013). Different types of sensation seeking: A new person-oriented approach in sensation seeking research. *International Journal of Behavioral Development*, 37(3), 74-285.
- Szabó Cs. & Vámos É. (2012). *Egyéb pszichés fejlődési zavarral küzdő gyermekek, tanulók komplex vizsgálatának diagnosztikus protokollja – Figyelemzavar és hiperaktivitás Diagnosztikai kézikönyv*, Budapest. Educatio Társadalmi Szolgáltató Nonprofit Kft.
- Snowling, M. J. (2012). Early identification and interventions for dyslexia: a contemporary view. *Journal of Research in Special Educational Needs*, 13(1): 7–14.
- Szűcs M. (2003) *Esély vagy sorscsapás? A hiperaktív, figyelemzavarral küzdő gyerekek helyzete Magyarországon*. Budapest. Nemzeti Tankönyvkiadó.
- Tsang, T. W., Kohn, M. R., Efron, D., Clarke, S.D., Clark, C. R., Lamb, C. & Williams, L. M. (2015). An anxiety in young people with ADHD: clinical and self-report outcomes. *J Atten Disord*, 19(1):18-26. doi: 10.1177/1087054712446830.
- Weinberger, K. A., Gardner, D. M., & Gerdes, A. C. (2015). Maternal Functioning Differences Based on ADHD Subtype. *Journal of Attention Disorders*, 22.(13): 1218-1223.
- Wolraich, M., Brown, L., Brown R. T., & Visser, S. (2011). ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*, 128(5):1007–1022.
- Yurumez, E., Yazici, E., Gumus, Y.Y., Yazici, A.B. & Gyrson, S. (2014). Temperament and Character Traits of Parents of Children With ADHD. *Journal of Attention Disorder*, 22 (13): 1200-1206.
- Zerafa, E. (2015). Helping Children with Dyscalculia: A Teaching Programme with three Primary School Children. *Procedia – Social and Behavioral Sciences*, 191: 1178–1182.

Citations of this thematic edition

- T. Kárász, J. (2019a). Estimation methods on standard error of different statistical parameters.
- T. Kárász, J. (2019b). Hibabeadási eljárások véletlen jelenségek paramétereinek becslésére.