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Teachers' Self-Efficacy Based on Symptoms of Attention Deficit Hyperactivity Disorder in Primary School Pupils

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Both the quality and quantity of teachers' experiences of self-competence in dealing with pupils with symptoms of Attention Deficit Hyperactivity Disorder have been the subject of a great deal of research. The permanent monitoring of the levels at which teachers accomplish such competencies, which have a positive effect on the improvement of teaching, is one of the tasks of educational science. The present paper determines how teachers self-assess their efficacy in teaching pupils with behavioural difficulties based on the pupils' symptoms of attention disorder and hyperactivity. Primary school teachers from 12 counties of the Republic of Croatia participated in the research. The teachers provided data for a total of 1,383 pupils in whom they subjectively detected behavioural difficulties. The research reveals that the characteristics of the pupil best predict the teacher's self-efficacy. More time spent in the classroom with the teacher, better academic achievement, and a lower school grade indicate higher self-efficacy in teachers.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD), primary school pupils, self-efficacy of teachers

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Samoučinkovitost učiteljev pri obravnavi učencev s simptomi motnje pozornosti s hiperaktivnostjo

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Kakovost in količina izkušenj učiteljev s samoučinkovitostjo pri obravnavi učencev s simptomi motnje pozornosti s hiperaktivnostjo predstavljata predmet številnih raziskav. Naloga pedagogike je – med drugim – stalno spremljanje stopenj, na katerih učitelji pridobivajo tovrstne kompetence, ki pozitivno izboljšujejo poučevanje. V prispevku je navedena lastna ocena učiteljev glede njihove učinkovitosti pri poučevanju učencev z vedenjskimi motnjami, ki so posledica simptomov motnje pozornosti s hiperaktivnostjo. V raziskavi so sodelovali osnovnošolski učitelji iz dvanajstih okrožij Republike Hrvaške. Učitelji so posredovali podatke za 1.383 učencev, pri katerih so subjektivno zaznali vedenjske motnje. V raziskavi je bilo ugotovljeno, da značilnosti učenca najbolje napovedujejo učiteljevo samoučinkovitost; več časa, preživetega z učenci v učilnici, boljši učni uspeh in nižja šolska ocena so kazalniki večje učinkovitosti učiteljev.

Ključne besede: motnja pozornosti s hiperaktivnostjo (ADHD), osnovnošolci, samoučinkovitost učiteljev

Introduction

The quality and quantity of a teacher's experience of his or her own competencies[4] in work with pupils have been the subject of a great deal of research (Jakson, 1990; Kalin, et al., 2017) because, in practice, information about teachers' self-assessments can be used to improve the quality of their work with pupils. According to the Wing Institute, an independent non-profit operating foundation dedicated to the promotion of evidence-based education policies and practices in K-12 education, instructional delivery, classroom management, formative assessment and personal competencies (soft skills) are the fundamental competencies of a teacher, distinguishing an effective teacher from an ineffective one. We believe that permanent monitoring of the level at which teachers accomplish these competencies is one of the tasks of educational science. In the context of improving inclusive theory and practice, it is particularly useful to monitor and analyse the effectiveness of teachers in teaching pupils who manifest a lack of attention or impulsivity/hyperactivity (Al-Omari et al., 2015; Merrell & Tymms, 2013; Vlah et al., 2018; Yada & Savolainen, 2017), as such pupils have special needs for which the teacher should be additionally motivated and trained. In the present paper, we try to determine how teachers assess their effectiveness in teaching pupils with behavioural disabilities based on their symptoms of Attention Deficit Hyperactivity Disorder (ADHD).

The term self-efficacy is derived from Social Cognitive Theory (Bandura, 1977) and was initially defined as "the belief in one's capabilities to organise and execute the courses of action requiring the management of prospective situations", as explained by Bandura (1997). The Teachers' Sense of Teacher Efficacy Scale (TSES), which was initially constructed and studied as the Ohio State Teacher Efficacy Scale (OSTES), was finally derived following several improvements and verifications (Gibson & Dembo, 1984; Tschannen-Moran et al., 1998; Tchannen-Moran & Hoy, 2001). As Tchannen-Moran & Hoy (2001) constructed the TSES to measure this construct, numerous authors validated its characteristics on different samples (Alcaraz-Ibsnez et al., 2018; Arata & Soto, 2012; Bakar & Mohamed, 2009; Bašić, 2008; Chang & Engelhard, 2016; Ekici & Güngör, 2014; Fabio & Palazzeschi, 2008; Fives & Buehl, 2009; Ghonsooly et al., 2014; Gurcay, 2015; Koomen et al., 2016; Lu & Manzar-Abbas, 2015; Maniadaki et al., 2006; Sariçoban, 2010; Ruan et al., 2015; Valenčić Štembergar & Lepičnik Vodopivec, 2016; Yada & Savolainen, 2017). According to various

4 Competencies are the knowledge and skills that give teachers the tools to be quality teachers with the goal of optimising pupil learning. Therefore, teachers have to be experts in wide array of competencies in an exceptionally complex environment, where hundreds of critical decisions are required each day (Jackson, 1990).

international studies, the TSES measures three constructs that are recognised as essential teacher competencies: *efficacy in pupil engagement, efficacy in instructional strategies, and efficacy in classroom management*. One of the most influential studies was conducted by Fackler & Malmberg (2016). The authors analysed 44,000 teachers in 2,800 schools in 14 OECD countries based on the 2008 Teaching and Learning International Survey and found that the principal's work experience and leadership style were significant predictors of teachers' self-efficacy.

Teacher efficacy has been proven to be strongly related to many meaningful educational outcomes, such as teachers' persistence, enthusiasm, commitment and instructional behaviour, as well as pupil outcomes such as achievement, motivation and self-efficacy beliefs. For example, there is a positive and moderately strong relationship between the perception of self-efficacy with regard to the teaching process and the perception of responsibility for pupil achievement (Kurt et al., 2014). The number of years of work experience was not relevant for the TSES, but emotional exhaustion was (Chang & Engelhard, 2016), much like self-efficacy, which was explained by the intrapersonal dimension (Fabio & Palazzeschi, 2008). There is a positive correlation between teacher self-efficacy and the use of metacognitive strategies (Ghonsooly et al., 2014), while the same authors found that gender is not relevant to teacher self-efficacy. Manzar-Abbas & Lu (2015), however, showed that female teachers have a higher sense of self-efficacy than their male colleagues.

Most studies show that the teachers' sense of self-efficacy is generally moderate to high (Bakar & Mohamed, 2009; Bašić, 2008; Chang & Engelhard, 2016; Gurcay, 2015; Kurt et al., 2014; Vlah, 2017), except in teaching pupils with behavioural difficulties in Japan (Yada & Savolainen, 2017) or Australia (Maniadaki et al., 2006). In Slovenia, preschool teachers also assessed themselves as moderately self-efficient in teaching, while more highly educated and less experienced preschool teachers considered themselves more self-efficient than preschool teachers with a lower education level but more work experience (Valenčić Štemberger & Lepičnik Vodopivec, 2016).

Bašić (2008) first translated and verified the TSES in Croatia by applying it to preschool teachers. Based on Bašić's (2008) translated and verified items in the Croatian cultural context, Vlah (2017) modified the TSES so that each teacher assessed his or her self-efficacy with regard to a specific child. In a preliminary study (Vlah, 2017), preschool teachers demonstrated high assessments of their self-efficacy (pupil engagement, classroom management and instructional strategies), but there was no relationship between the assessed self-efficacy and age, years of work experience, level of education or the need

for additional professional assistance. The length of working with a child was, however, positively linked to effective involvement and individualisation.

In the present study, we attempted to use the modified TSES (Vlah, 2017) by applying it to primary school teachers, who assessed their pupils with moderate and/or high emotional-behavioural disorders (EBD). A similar use of the TSES is known from a study carried out by Zee et al. (2016), where the TSES was part of research in which the authors found one higher-order factor (Overall TSE) and four lower-order factors (Instructional Strategies, Behaviour Management, Pupil Engagement and Emotional Support).

The present research was carried out as part of a project[5] whose general objective was to explore the proficiency of teachers in Croatia for the educational inclusion of pupils with emotional-behavioural difficulties (EBD). In the pre-research phase of the project, it was determined (Družinec et al., 2019) that, in Croatia, teachers of both genders consider themselves competent to work with pupils with EBD. They regard themselves as equally effective in dealing with boys and girls in two dimensions (classroom management and instructional strategies) but not in the dimension of pupil engagement, in which they find themselves to be more effective in working with girls. They also consider themselves to be more effective in providing instructional strategies in their work with younger pupils. Furthermore, when compared to their younger colleagues, older teachers consider themselves to be more effective.

Purpose of the study

The research aims to verify whether the ADHD symptoms (hyperactivity-impulsivity and inattention) of primary school pupils with behavioural difficulties could predict the lower self-efficacy of their teachers. The characteristics of the teachers and the school (gender, work experience, school size, years of knowing the pupil), as well as of the pupil (gender, grade, academic achievement and the weekly number of classes the pupil spends with the teacher), were taken into consideration. It is hypothesised that the symptoms of ADHD, along with the partialisation of the expected contributions of the teacher, school and pupil characteristics, are significant predictors of a teacher's self-reported self-efficacy.

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Method

Participants

Primary school teachers from 12 counties of the Republic of Croatia (Koprivnica-Križevci County, Sisak-Moslavina County, Varaždin County, Primorje-Gorski Kotar County, Međimurje County, Osijek-Baranja County, Vukovar-Srijem County, Brod-Posavina County, Lika-Senj County, Split-Dalmatia County, Zagreb County) and the City of Zagreb took part in the research. The teachers provided data for a total of 1,383 pupils in whom they subjectively detected behavioural difficulties. The average age of the teachers was M = 43.16 years (SD = 10.06) and the average internship M = 17.52 years (SD = 10.80). Most of them were female (86.3% female and 13.7% male teachers). Only a small number of the teachers worked in a small school (8.4% worked in schools with fewer than 200 pupils), while most of them worked in a middle-sized (43.8% in schools with 200 to 500 pupils) or large school (47.8 % in schools with over 500 pupils). Table 1 shows the number of years that the teacher providing the assessment had known the assessed pupil.

Table 1
Length of time the teacher had known the assessed pupil

Length of time	N	%
Less than one year	161	11.9
1 year	277	20.4
2 years	329	24.3
3 years	303	22.3
4 years	235	17.3
More than 4 years	51	3.8
Total	**1,356**	**100.0**

The teachers also provided basic information about the pupils they assessed. The criterion of pupil selection for the assessment was that the pupil shows behavioural difficulties. At the time of the assessment, the teachers were the pupils' homeroom teachers. They judged that the pupils had behavioural difficulties that were demonstrated during regular classes, breaks, leisure activities and in similar situations. Therefore, the homeroom teachers were asked to determine whether they had one or more such pupils in their classroom and to provide self-assessments of their self-efficacy concerning those pupils. Of the assessed pupils, 87% were boys and only 13% were girls. All age groups were

equally affected (10% to 15%), as can be seen in Table 2. On average, teachers spent $M = 11.23$ hours per week ($SD = 8.31$) during class with the specific pupil. Table 3 shows the academic achievement of the pupils with regard to the grade.

Table 2

Distribution of the assessed pupils by grade

Grade	N	%
First	149	11.1
Second	191	14.2
Third	204	15.2
Fourth	199	14.8
Fifth	131	9.8
Sixth	174	13.0
Seventh	162	12.1
Eighth	132	9.8
Total	**1,342**	**100.0**

Table 3

Academic achievement of the pupils for whom the teachers provided data

Academic achievement	N	%
Fail	26	2.0
Acceptable	94	7.3
Good	503	39.2
Very good	496	38.6
Excellent	165	12.9
Total	**1284**	**100.0**

Instruments

The measuring instruments used for this research were the Pupils' Behavioural Symptoms Scale (Sekušak-Galešev, 2005) and the Self-Estimated Self-Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001; adapted by Bašić, 2008, according to Vlah, 2017).

The Pupils' Behavioural Symptoms Scale (Sekušak-Galešev, 2005)

The Pupils' Behavioural Symptoms Scale, which measures the frequency of ADHD symptoms, was created based on the translation and adaptation of the D4 NICHQ-Vanderbilt Assessment Scale – Teacher Questionnaire (Wolraich,

2002). It consists of 35 items divided into four subscales: Impulsivity-Hyperactivity (k = 9), Emotional Problems (k = 7), Inattention (k = 9) and Antisocial Behaviour (k = 10). The participant's task is to assess on a four-point Likert scale how often certain behaviours have occurred in the pupil since the beginning of the school year by circling the appropriate number in front of a statement: 0 – never, 1 – occasionally, 2 – often, and 3 – very often. The result is obtained with the arithmetic mean of the selected items. The principal component analysis, with oblimin rotation, confirmed the four-factor solution. According to Guttman-Kaiser's criterion, six factors accounted for 65.47% of the variance, but the last two factors explained less than 4% of the variance and were not interpretable. According to the Scree Test criteria, four factors were segregated and explained 58.71% of the total variance, with the item layout being almost the same as in the original questionnaire. The internal reliability in the conducted research for the impulsivity-hyperactivity subscale was Cronbach α = .93, with the subscale α = .88 for emotional problems, the subscale α = .86 for inattention, and the subscale α = .92 for antisocial behaviour, indicating high reliability.

The Self-Estimated Self-Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001; adapted by Bašić, 2008, according to Vlah, 2017).

Bašić (2008) translated and published this scale as a general self-assessment of preschool teachers, and Vlah (2017) adapted the items so that the efficacy is self-estimated, specifically when dealing with a specific subject, rather than reflecting the broad experience of self-efficacy in work situations. Furthermore, Vlah argued that this is a three-factor structure of the scale, whereby three reliable dimensions measuring pupil engagement (k = 4, α = .83), instructional strategies (k = 4, α = .84) and classroom management (k = 4, α = .80) stand out. This adapted and adjusted scale, in which the pedagogical employee assesses his or her performance concerning a specific pupil, was applied in the conducted research. The scale measures the experience of one's professional efficiency, i.e., the level of perceived self-efficacy of the teacher. It consists of 12 items, which teachers use to assess themselves and their efficacy in working with a child by circling the number reflecting the level of agreement with the particular statement: 0 – never, 1 – almost never, 2 – sometimes, 3 – almost always, and 4 – always. The result is obtained by the arithmetic mean of the selected items. The original scale shows a three-factor structure, although it can be used as a single-factor scale. Principal component analysis with oblimin rotation, in accordance with the Guttman-Kaiser's criterion, confirmed a three-factor structure in the conducted research, which explained 64.60% of the variance, although two items had higher factor loadings on other factors than

the theoretical ones. The internal reliability in the conducted research of the one-factor solution was Cronbach α = .89, and the internal reliabilities for the three-factor solutions was satisfactory: pupil-engagement[6] α = .77, instructional strategies[7] α = .83 and classroom management[8] α = .76.

Data collection procedure

Students enrolled in Teacher Education studies took part in the data collection as a part of their master thesis research in all of the counties except in Zagreb (where researchers were employed). The principals of the selected primary schools were contacted before the implementation of the research. After obtaining their consent, the purpose and procedure of the research were explained to the principals, teachers and the professional service, and it was made clear that they could opt out of the research at any time. Official correspondence was sent to the school principals who had agreed to participate in the study. After the principal's consent was obtained, an interview was carried out with the school's professional service, whose purpose was to encourage the teachers to co-operate and to ensure coordination between teachers and researchers. The questionnaires were handed out in envelopes to teachers who had pupils with behavioural difficulties in their classroom and the research purpose was presented to the teachers. The completion of the questionnaires was voluntary and the anonymity of the respondents was emphasised. After the coordinator was informed that all of the submitted questionnaires had been completed and returned inside envelopes to ensure the anonymity and confidentiality of the responses, thus reducing the number of socially desirable responses, the student-researcher collected them in person.

Results

Descriptive statistics were calculated for all of the measured variables before proceeding with data analysis (Table 4). Testing the distribution normality revealed that the distribution of the research variables does not deviate significantly from the normal distribution. Asymmetric indices did not exceed values higher than +/- 2.00 and parametric statistics were applied.

6 Pupil engagement (SE) factor (items: get pupils to believe they can do well in schoolwork, motivate pupils who show low interest in schoolwork, help pupils to value learning).

7 Instructional strategies IS (use a variety of assessment strategies, implement alternative strategies in your classroom, provide an alternative explanation or example when pupils are confused, families in helping their children do well in school (SE)).

8 Classroom management CM (control disruptive behaviour in the classroom, get children to follow classroom rules, calm a pupil who is disruptive or noisy, establish a classroom management system with each group of pupils).

Table 4

Descriptive statistics for the measured variables

Variable	N	Min	Max	M	SD	Skewness	Kurtosis
School size	1382	1.00	4.00	3.36	.73	-1.174	1.549
Internship at school	1291	.00	46.00	17.52	10.80	.384	-.862
Knowing the pupil	1356	.00	5.00	2.24	1.37	.039	-.899
Enrolled grade	1342	1.00	8.00	4.34	2.21	.125	-1.183
Time spent with the teacher	1305	1.00	40.00	11.23	8.31	.246	-1.036
Academic achievement	1284	1.00	5.00	3.53	.88	-.293	.144
Inattention	1378	.00	3.00	1.90	.60	-.264	-.310
Impulsivity-hyperactivity	1378	.00	3.00	1.57	.82	-.148	-.935
Self-efficacy	1378	.58	4.00	3.07	.55	-.512	.700
Efficacy for instructional strategies	1377	.00	4.00	3.02	.663	-.679	.996
Efficacy for classroom management	1378	.50	4.00	3.09	.61	-.434	.033
Efficacy for pupil engagement	1378	.50	4.00	3.10	.65	-.614	.315

Note. Min – minimum score; *Max* – maximum score

All of the preconditions for conducting a regression analysis were met; therefore, the data were analysed using hierarchical regression analysis (Table 5). In the first step, the characteristics of the school and teacher were kept under control (school size, teacher's gender, work experience, years of knowing the pupil) and, in the second step, the characteristics of the pupil (time spent with the teacher, pupil's gender, grade, academic achievement) were examined. In the third step, ADHD symptoms (impulsivity-hyperactivity and inattention) were introduced as predictors of a poorer self-efficacy of teachers. All of the analyses were carried out four times with the same predictors, for four different criteria (Self-efficacy of teachers, Efficacy for instructional strategies, Efficacy for classroom management and Efficacy for pupil engagement).

Table 5

Results of the regression analysis

Criterion	Self-efficacy of teachers	Efficacy for instructional strategies	Efficacy for classroom management	Efficacy for pupil engagement
Predictors	β	β	β	β
School size	-.023	-.016	-.027	-.018
Teacher's gender	.040	.069*	-.006	.035
Internship at school	.093**	.101**	.041	.098**
Knowing the pupil	.046	.035	.021	.060*
Regression model	R=0.122; R^2=0.015; R^2kor=0.011; $F_{(4,1109)}$=4.14 p< .01 Cohen's f^2=0.02	R=0.136; R^2=0.018; R^2kor=0.015; $F_{(4,1109)}$=5.18 p< .01 Cohen's f^2=0.02	R=0.057; R^2=0.003; R^2kor=0.011; $F_{(4,1109)}$=0.88 p> .01 Cohen's f^2=0.00	R=0.131; R^2=0.017; R^2kor=0.014; $F_{(4,1109)}$=4.84 p< .001 Cohen's f^2=0.02
School size	-.007	-.001	-.019	.000
Teacher's gender	-.033	.006	-.053	-.043
Internship at school	.019	.032	-.008	.024
Knowing the pupil	.086*	.081*	.047	.092**
Time spent with the teacher	.175**	.157**	.119*	.174**
Pupil's gender	.068*	.084**	.015	.070*
Grade	-.087	-.099	-.059	-.066
Academic achievement	.087**	.024	.050	.148**
Regression model	R=0.307; R^2=0.095; R^2_{kor}=0.088; $F_{(8,1109)}$=14.37 p< .001 ΔR^2=0.08; Cohen's f^2=0.08	R=0.286; R^2=0.082; R^2_{kor}=0.075; $F_{(8,1109)}$=12.28 p< .001 ΔR^2=0.06; Cohen's f^2=0.09	R=0.188; R^2=0.035; R^2_{kor}=0.025; $F_{(8,1109)}$=5.06 p< .001 ΔR^2=0.035; Cohen's f^2=0.04	R=0.333; R^2=0.111; R^2_{kor}=0.104; $F_{(8,1109)}$=17.17 p< .001 ΔR^2=0.094; Cohen's f^2=0.11
School size	-.006	.000	-.017	.000
Teacher's gender	-.024	.010	-.040	-.035
Internship at school	.020	.033	-.006	.025
Knowing the pupil	.092**	.084*	.055	.097**
Time spent with the teacher	.181**	.159**	.128**	.180**
Pupil's gender	.049	.074*	-.010	.055
Grade	-.105*	-.108*	-.082	-.081
Academic achievement	.088**	.034	.051	.139**
Inattention	-.023	.010	-.032	-.042
Impulsivity - hyperactivity	-.123**	-.081*	-.162**	-.078*
Regression model (final solution)	R=0.334; R^2=0.112; R^2_{kor}=0.104; $F_{(10,1109)}$=13.83 p< .001 ΔR^2=0.017; Cohen's f^2=0.02 Cohen's f^2=0.13 (for whole model)	R=0.296; R^2=0.088; R^2_{kor}=0.079; $F_{(10,1109)}$=10.55 p < .05 ΔR^2=0.004; Cohen's f^2=0.00 Cohen's f^2=0.10 (for whole model)	R=0.256; R^2=0.066; R^2_{kor}=0.057; $F_{(10,1109)}$=7.71 p< .001 ΔR^2=0.031; Cohen's f^2=0.03 Cohen's f^2=0.07 (for whole model)	R=0.348; R^2=0.121; R^2_{kor}=0.113; $F_{(10,1109)}$=15.12 p< .01 ΔR^2=0.002; Cohen's f^2=0.00 Cohen's f^2=0.14 (for whole model)

Note. * p< .05; ** p< .01.

The results of the regression analysis show that the selected predictors explain only a small proportion of the teacher self-efficacy variance (about 10%), while the effect size for the whole model is moderate (Cohen's $f^2 = .13$, according to Kolesarić & Tomašić Humer, 2017). The characteristics of the pupil best predicted teacher self-efficacy. More time spent with the teacher, better academic achievement and a lower grade better predict the self-efficacy of the teachers. The pupil's characteristics explain a total of 8% of the teacher self-efficacy variance, which is not a large proportion, and the effect size is small (Cohen's $f^2 = 0.08$). Furthermore, the characteristics of teachers and schools explain only about 1% of the variance, in the sense that teachers who believe they know their pupil better also assess their self-efficacy higher and the effect size is almost insignificant (Cohen's $f^2 = .02$). This, in turn, speaks in favour of the fact that the characteristics of teachers and schools are not essential for predicting teacher self-efficacy. ADHD symptoms, i.e., impulsivity-hyperactivity, have been shown to be significant in predicting teacher self-efficacy. A higher level of impulsivity-hyperactivity predicts a lower self-efficacy of the teacher and explains an additional 1.7% of the variance. Despite being a significant predictor, it has a small effect (Cohen's $f^2 = .02$). Interestingly, inattention did not prove a significant predictor, but it should be taken into account that, in their selection of pupils for whom they made their assessments, the teachers first detected those pupils with behavioural problems, so that additional attention problems (as part of behavioural problems) did not prove to be significant.

For the overall model, almost the same result was obtained with regard to the observed variance. The overall variance of pupil engagement was best explained (about 12%), followed by instructional strategies (about 9% of explanation of the overall variance), and classroom management (only about 7% of explanation of the overall variance), while the effect sizes for the whole models were small (classroom management) to moderate (pupil engagement and instructional strategies).

For pupil engagement, some predictors were significant for overall teacher self-efficacy. The characteristics of the pupil best predict the efficacy for pupil engagement. More time spent with the teacher and better academic achievement predict better teacher efficacy for pupil engagement. The pupil's characteristics explain a total of 10.4% of the variance, which is not a large proportion, and the effect size is modest (Cohen's $f^2 = .09$). Furthermore, the characteristics of teachers and schools explain only about 1% of the variance, in the sense that teachers who believe they know their pupils better also assess the efficacy for pupil engagement more highly, and the effect size is almost insignificant (Cohen's $f^2 = .02$). ADHD symptoms, i.e., impulsivity-hyperactivity, are significant

in predicting the efficacy for pupil engagement of teachers. A higher level of impulsivity-hyperactivity predicts lower efficacy for instructional strategies of teachers and explains an additional 0.2% of the variance. Despite being a significant predictor, the effect size is insignificant (Cohen's $f^2 = .00$). For teacher efficacy for pupil engagement, only the pupil's characteristics are important.

For instructional strategies, the characteristics of the pupil also best predicted teacher efficacy. More time spent with the teacher, a lower grade, and the female gender predict a higher efficacy for instructional strategies of teachers. The pupil's characteristics explain a total of 6% of the variance, which is not a large proportion, and the effect size is moderate (Cohen's $f^2 = .11$). Furthermore, the characteristics of teachers and schools explain only about 2% of the variance, in the sense that teachers who believe they know their pupil better also assess the efficacy for instructional strategies more highly, and the effect size is almost insignificant (Cohen's $f^2 = .02$). ADHD symptoms, i.e., impulsivity-hyperactivity, are significant in predicting the efficacy for instructional strategies of teachers. A higher level of impulsivity-hyperactivity predicts a poorer efficacy for instructional strategies of teachers and explains an additional .4% of the variance. Even though it is a significant predictor, the effect size is insignificant (Cohen's $f^2 = .00$). For teacher efficacy for instructional strategies, only the characteristics of pupils are important.

For classroom management, the characteristics of teachers and schools were not significant predictors. Only one pupil characteristic, more time spent with the teacher, predicts a higher efficacy for classroom management of teachers, explaining 3.5% of the variance, with a modest effect size (Cohen's $f^2 = .04$). ADHD symptoms, i.e., impulsivity-hyperactivity, are significant in predicting the efficacy for classroom management of teachers, explaining an additional 3.1% of the variance, and the effect size is small (Cohen's $f^2 = .03$). For teacher efficacy for classroom management, only the time spent with teachers and symptoms of impulsivity-hyperactivity are important.

Discussion

The problem and aim of this research was to explore whether ADHD symptoms (hyperactivity-impulsiveness and inattention) of primary school-aged pupils with behavioural difficulties predict a poor self-efficacy of teachers. The hypothesis, which stated that the symptoms of ADHD, with the partialisation of the expected contributions of the teacher, school and pupil characteristics, are significant predictors of the teacher's self-reported self-efficacy, has been partially confirmed.

Considering the characteristics of the teacher and the school (gender, work experience, school size and years knowing the pupil) as well as of the pupil (gender, grade, academic achievement and the number of classes spent with the teacher per week), it was found that there is a moderate predictive contribution to teacher self-efficacy. With a small effect size, pupils' characteristics could explain teacher self-efficacy.

Although there is a contribution of the teacher's assuredness in the degree to which they know their pupils better, because of its very small effect size we have to infer that the characteristics of teachers and schools are not essential for predicting teacher self-efficacy. However, it is evident that ADHD symptoms, i.e., impulsivity-hyperactivity, are significant in predicting the self-efficacy of teachers, even though neither of these has a major contribution effect. Inattention did prove to be a significant predictor, as has already been described.

There are few studies on teachers' self-assessed efficacy in their work with pupils with behavioural difficulties; therefore, the results obtained in this research are interesting as an orientation for possible future research. Specifically, it was found that, in the area of expected predictors (ADHD symptoms, teacher and school characteristics and pupil characteristics), some relevant indicators could be identified for a lower sense of efficacy in working with pupils with behavioural difficulties. Thus, the obtained results may indicate areas of support for those teachers who work with this challenging pupil population in the regular education system. Of course, it should be noted that the effects of the predictive contribution in all of the obtained relationships were very weak. In this sense, we should be aware that, in the future, it will be necessary to explore other potential predictors that contribute to the self-assessed efficacy of teachers in teaching pupils with behavioural difficulties.

The basic finding of our research suggests that more time spent with the teacher, better academic achievement and a lower grade better predict the self-efficacy of teachers. Moreover, teachers who believe in having a better knowledge of their pupils assess their self-efficacy in work with such children more highly. When these predictive influences are isolated, it may be implied that higher hyperactivity-impulsivity in pupils with behavioural difficulties is additionally significant for poorer assessments of efficacy among teachers. What do these findings mean for understanding and improving the everyday practice in inclusive classrooms in which pupils with behavioural difficulties are taught?

Contemporary research on the quality of the teacher-pupil relationship suggests that, in the efficient and quality teaching of pupils with behavioural difficulties, the establishment and maintenance of positive and supportive relationships is one of the key characteristics of pupils' attachment to the school,

better academic success, and the overall optimal psychosocial maturation of the pupil and the preservation of mental health (Granot, 2014; Posavec & Vlah, 2019). In Croatian schools, in homeroom teaching, there are more opportunities to establish and maintain relationships due to the higher number of classes that a pupil spends with the teacher. This, however, is more challenging to achieve in subject teaching due to fewer weekly classes and (too) many subjects.

One question to consider in future research might be whether some pupils with behavioural difficulties may benefit from being taught more classes by fewer teachers. Interestingly, the length of knowing a pupil did not prove significant for better efficacy only in classroom management (while it is significant in instructional strategies and pupil engagement). In other words, knowing a pupil for a longer period of time did not prove to be relevant for the more effective calming down of a disruptive or noisy pupil, establishing a group management system when that pupil is present, controlling the disruptive behaviour of that pupil when necessary, and making him or her follow the rules of the game. It is relevant to effectively design different activities for such a pupil, fit different alternative strategies into the work with him or her, use different strategies to track his or her progress, provide additional explanations and examples when the pupil requires them, assist parents in helping the pupil to master various skills, support the pupil to believe that he or she can do well in schoolwork, motivate the pupil to participate in various activities when needed, and help the pupil to assess his or her own work. Why is this so? Instructional strategies and pupil engagement are probably the skills that require a deeper relationship of trust with the pupil, which is a prerequisite for knowing the pupil longer and spending more time with him or her. Another possible reason, of a methodological nature, is that homeroom teachers (who spend more time with pupils) have different criteria for self-assessing classroom management in terms of class discipline, and thus provided lower self-assessments.

Hyperactivity-impulsivity is a significant predictor that makes teachers in Croatia feel less effective in dealing with pupils with behavioural difficulties. Previous research has confirmed this finding. Thus, one study showed that the teacher's positive attitudes, motivation and education contribute to a better involvement of pupils with developmental difficulties in the educational process itself (Vlah et al., 2017). Moreover, this research further emphasises the need for better teacher education for working with pupils who demonstrate impulsive behaviour or hyperactivity during class. Similar results were obtained by Vlah & Kovačić (2017). In their research, it was shown that teachers almost always implement positive reinforcement of their pupils and very often use inclusive communication in their work with pupils with attention difficulties. They apply

the lowest number of didactic-methodical methods, i.e., they apply them rarely. The authors imply that teachers are educated through lifelong learning; therefore, it is necessary to change the curricula and enable collaboration between professional associates and teachers, so that the strategies can be effective and timely.

Research has also shown that more knowledge for working with children with emotional difficulties and behavioural problems is gained through independent work and additional education (Valenčić Štembergar & Lepičnik Vodopivec, 2016). The research results point to the need for further improvement of preschool teachers to promote healthy child development and the prevention of risk behaviour and behavioural disorders in preschool children (Bašić, 2008).

Conclusion

Outcomes of the study

The research aimed to explore whether ADHD symptoms (hyperactivity-impulsiveness and inattention) of primary school pupils with behavioural difficulties predict the poor self-efficacy of teachers. The research showed that the characteristics of the pupil best predict teacher self-efficacy. More time spent in the classroom with the teacher, better academic achievement and a lower grade better predict the self-efficacy of teachers. Furthermore, the research showed that those teachers who believe they know their pupil better also assess their self-efficacy more highly. The magnitude of the effect is almost insignificant, suggesting that the characteristics of the teacher or the school are not crucial when predicting teacher self-efficacy. A higher level of impulsivity-hyperactivity predicts a lower self-efficacy of teachers and explains a very small proportion of the variance.

Limitations and suggested future lines of research based on the findings reported in the manuscript

The methodological limitations of the research are reflected in the teachers' subjectivity in the self-assessment of their self-efficacy. These limitations may be overcome in future research with objective assessments by the users of the educational service (e.g., pupils with EBD and/or their parents) or observations by a co-teacher as a critical friend, i.e., by the researcher applying a non-participatory monitoring methodology. Moreover, one methodological weakness of the research, the prevalence of which may provide an accurate answer to our research questions in future research, is the selection of participants

based on the subjective impression of their homeroom teacher that they have EBD. Future research should perhaps examine self-efficacy only in relation to teaching pupils with EBD who have also been diagnosed with ADHD based on objective diagnostic interdisciplinary procedures and hold a certificate recommending special education provision. It would be interesting to analyse the teacher's self-efficacy in such a subgroup of participants, either on the subjectively assessed or the objectively measured level. Regardless of the possible limitations of the study, there are few studies in Croatia on the self-assessed efficacy of teachers in their work with pupils with difficulties, which makes the results obtained in this research interesting as an orientation for possible future research. The authors hope that the obtained results will be verified on a larger scale and sample.

Application of the conclusions in practice

The purpose of the present paper was to reflect on teachers' efficacy in teaching pupils who exhibit inattention or impulsivity/hyperactivity behaviours in the context of improving the inclusive theory and practice in working with pupils with EBD. In this respect, the findings of the research may imply some specific recommendations for practice (which, among other things, should be monitored to analyse teachers' efficacy in dealing with this vulnerable group of pupils). In this regard, the authors of the paper conclude that, based on the results obtained, well-known general recommendations for the improvement of educational practice can be confirmed, such as: 1) the need for the availability of lifelong education for teachers, 2) the availability of a multidisciplinary approach to working with this population, and 3) the greater availability of knowledgeable foundations. Specifically, the implications for improving the education and care of pupils with behavioural difficulties in Croatia, i.e., improving the current day-to-day practice in schools, are as follows:

- Schools as public institutions and the Education and Teacher Training Agency, which is responsible for the lifelong learning of teachers, should assume the responsibility of enhancing their teachers' competences in becoming familiar with their own pupils and understanding the pupils' developmental characteristics of biological developmental difficulties (such as impulsivity or hyperactivity) that may interfere with teacher--pupil interaction in the teaching process.
- For pupils showing EBD characteristics, schools and the local community need to provide additional professional assistance in reducing and overcoming these difficulties in order for the teacher to have the opportunity in his or her everyday educational work to socially integrate

pupils with EBD and support their optimal psycho-social maturation through regular inclusive teaching.

- Teachers with low self-assessed pupil engagement, instructional strategies, and classroom management of their work with pupils with EBD should, with the encouragement and support of the school and the principal, have more joint time allocated to teaching activities.

These recommendations, which can increase the teacher's self-efficacy experience, are especially relevant for subject teachers in upper primary school grades, given that teachers have fewer opportunities to spend more hours with their pupils in general and fewer opportunities to better understand their behaviour. The above recommendations relate to teachers in Croatia who have agreed to participate in the research and are likely to be interested in improving their education and care. Therefore, the results obtained, given their aforementioned methodological limitations above, may be considered as valuable communication of the participants aimed at the decision-makers of education policies.

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