

**The relationship between behavior problems, gender,
special education status and school performance in the
early grades of school**

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SUMMARY

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The purpose of this master's thesis was to find out whether there are changes in the average level of behavior problems of pupils from 1st to 2nd grade and whether gender or receiving part-time special education is related to the average level or possible change in behavior problems. Furthermore this study tested whether behavior problems in the 1st grade predict the school performance in reading, writing and mathematics in the 2nd grade.

The data used in the study was collected as a part of the Eastern Finland special education development project (ISKE). The data was collected years 2010-2012 from six municipalities in Eastern Finland. 30 schools and 57 classes from these municipalities participated in the research. A total of 311 1st grade pupils were included in this study and followed through the 2nd grade.

There was no change in the level of behavior problems from 1st to 2nd grade. There were no differences in the trend of behavior problems between genders or between students who were receiving or not receiving part time special education. However, boys had on the average more behavior problems than girls. The behavior problems in the 1st grade predicted lower school performance in writing on the 2nd grade, but not the performance in reading or mathematics on the 2nd grade.

It was concluded that, the known negative effects of behavior problems can be seen already in the very beginning of school. The result is consistent with earlier studies, showing negative consequences for older pupils. These findings highlight the importance of supporting pupils expressing behavior problems already in the beginning of school before the problems escalate and start affecting eg. School performance. The role of universal support (Tier 1) is crucial in this regard. In the future it is important to study and develop proactive ways to support behavior and behavior management in schools and classrooms.

Keywords: Behavior problems, school performance, academic achievement, early grades of school, classroom behavioral climate, positive behavior support.

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1 INTRODUCTION

Behavior problems have been an area of research interest for the last century. Recently the interest in education has internationally increased considering especially moving towards inclusion and raising educational standards. Consequently behavior problems in school will remain a prominent area of interest in educational research (Emam and Kazem, 2014).

In a significant amount of studies associations between problem behavior and academic achievement has been documented. It has been unclear, whether behavior problems generate low academic achievement or vice versa. It seems, on the whole, that behavioral and academic problems influence reciprocally one another (Barriga, Doran, Newell, Morrison, Barbetti & Robbins, 2002). In the course of time the thread of behavior problems and low academic achievement affects negatively both the development of individuals and their environment. From the educational perspective behavior problems in school are preventing optimal learning. Seen from the psychopathological point of view, low academic achievement in turn represents a risk factor in producing poor behavioral outcomes (Barriga et al. 2002).

According to Emam and Kazem (2014) school leaders, managers and policymakers in education systems are getting more interested in teachers' concerns about students' recurring and severe behavior problems. This trend among previously mentioned would be more than welcome, because the teacher's ability to manage with misbehaving children can prevent the need to refer these children to a special education program and prevent from dropping out of school (Schiff & BarGil, 2004). Disruptive behavior and poor classroom behavioral climate are a big source of work-related stress for both teachers and students.

It is obvious that disruptive behavior in classrooms is a big challenge for learning and also a risk factor for students' academic achievement (Närhi, Kiiski, Peitso & Savolainen, 2015; Nash, Schlösser & Scarr, 2015). A disruptive classmate's negative impact on peers is also of growing concern, because disruptive classroom behavioral climate impedes the learning process and lowers the school performance of the entire class (Blank & Shavit, 2016).

Children with behavior problems often are underachievers, which is alarming as academic success has a great importance for a child's long term development. (Henricsson and Rydell, 2006). According to Kauffman and Landrum (2013) misbehaving children are failing not only in their teacher's and peer's eyes, but also in their own eyes.

Although previous studies have indicated that childhood behavior problems predict lower scores on later academic tests and decreasing the educational attainment, it not fully known which types of behavior problems most likely predict the negative outcomes (Breslau, Miller, Breslau, Bohnert, Lucia & Schweitzer, 2009; Barriga et al. 2002). The comorbidity of problem behaviors is quite usual among school-age children and adolescents (Barriga et al., 2002) which makes the definition of problem types complicated.

Understanding of the relationship between behavior problems and school performance is crucial for generating appropriate prevention, assessment and intervention strategies for the troubled or at-risk children (Barriga et al., 2002). More research about behavior problems in the early grades of school needs to be done in order to develop effective, proactive ways to prevent behavior problems.

The purpose of this master's thesis is to find out whether there are changes in the level of behavior problems between 1st and 2nd grade and whether gender or receiving part-time special education at the school start is related to the average level or the trend of behavior problems. In addition, the aim is to find out if behavioral problems in the 1st grade predict school performance on the 2nd grade.

In this thesis pupils' behavior problems are assessed by a screening tool used by the class teacher, which does not allow strong diagnostic assumptions on behavior problems. However, as much of the research literature is based on diagnostic studies, also these will be reflected in the following theory part.

1.1 Externalizing and internalizing behavior problems

Behavior problems are divided into two main categories, externalizing and internalizing behavior problems (e.g. Al-Yagon 2015; Beg, Casey & Saunders 2007; Bornstein, Hahn & Haynes 2010; Cramer, 2015; Henricsson and Rydell 2006; Zimmerman, Schutte, Taskinen & Köller 2004). As the term externalizing suggests, the behavior shows out and is expressed openly (Cramer, 2015). Externalizing behavior is commonly referred to as aggressive and antisocial behavior, which may include cursing, stealing, fighting and destroying property (Zimmerman et al, 2004). Externalizing behavior is characterized as under controlled, noncompliant and including difficulties in attention and self-regulation and even delinquency (Bornstein et al, 2010; Henricsson and Rydell, 2006). Impulsivity, destructive behavior, possible temper tantrums and over-activity can be harmful to others or at least disruptive. Externalizing behavior is generally unacceptable and disapproved because it violates social mores and can cause distress to others (Cramer, 2015). Many adolescents at some point exhibit deviant behavior which is a part of development as they get older. Acts of externalizing behavior are not necessarily clinically significant or to be concerned (Zimmerman et al. 2004).

Internalizing behavior in turn is over controlled including social withdrawal, sense of inferiority, loneliness, depression, anxiety, self-consciousness, shyness, hypersensitivity, and somatic complaints (Bornstein et al, 2010; Henricsson and Rydell, 2006). Internalizing behavior disorders are characterized also by intropunitive emotions and moods of guilt, sorrow and worries (Henricsson and Rydell, 2006). Internalizing problems are experienced internally and

affiliate with emotions and behaviors within the individual. They may not show directly in the external world but may be hidden or disguised (Cramer, 2015).

Externalizing behavior problems seem to be not only associated with long-term negative outcomes such as school failure and adult criminality but also as highly stable whilst internalizing problems and their continuation are less consistent (Henricsson and Rydell, 2006). At most times, and in school environment, the externalizing behavior gets the most attention, whilst the internalizing behavior problems may not be noticed as well.

1.2 Different types of behavior problems

It is suggested that more than 30 % of children experience a clinical level behavior and mental disorder difficulties during childhood or adolescence (Forness, Freeman, Paparella, Kauffman, & Walker, 2012). Externalizing behavior problems are considered as disruptive ones. In disruptive behavior problems there are two main categories: attention deficit hyperactive disorder (ADHD) and conduct disorder (CD). ADHD can be interpreted as a behavior problem, although it has different origins than CD. The core problem in ADHD is the chronic inability to regulate and control one's attention and activity. According to Kauffman and Landrum (2013) most ADHD definitions see it as a developmental disorder evident early in life and persisting throughout a person's whole life. Attention problems in general are found to be comorbid and related to behavior problems (Barriga et al. 2002). CD in turn concerns antisocial behavior. A child diagnosed with CD exhibits strenuous, frequent antisocial behavior impairing everyday functions both at home and at school leading to the unfortunate conclusion of a child being unmanageable (Kauffman and Landrum, 2013). Diagnosed conduct problems are also found to predict strongly psychiatric outcomes (Gyllenberg et al., 2010). Oppositional defiant disorder (ODD) is often defined as a mild form of CD and also preceding CD. ODD is characterized by a pattern of defiant, hostile and negativistic behavior (Silverton, 1998). According to Silverton, children with ADHD are diagnosed often with ODD too. ODD's

comorbidity with learning disorders is also usual. ADHD, ODD, and CD are the most common forms of psychopathology among children and youth (Farris, Nicholson, Borkowski & Whitman, 2010).

Separating ADHD and CD can be sometimes difficult. In research literature, ADHD is often concluded in external behavior problems and interpreted as one. According to Frick (1998) there is a consistent finding of comorbidity between attention problems and conduct disorders. Beg et al. (2007) note that the comorbidity of ADHD and behavior problems can cause deficits in social skills which is also seen in the disruptive behavior problems subtype.

Behavior problems vary from severe, diagnosed conduct problems to mild external misbehavior. Behavioral problems are difficult to classify and study because many children and adolescents show multiple problem behaviors. In assessing children the result is often a list of problem areas instead of specific diagnoses. Problem behavior often involves different variations of behavior that most children during their development show to some degree (Barriga et al. 2002; Sourander, 2001.) Also children who have been classified according traditional categories often display significant heterogeneity in their behavior (Saunders, Hall, Casey & Strang, 2000).

The studies have provided consistent evidence of behavior problems in children generally loading on to externalizing and internalizing broadband factors. Despite that, there are studies considering the typology of behavior problems that have shown that there are several subtypes of behavior problems that do not precisely follow the division into externalizing and internalizing behavior problems (Beg et al. 2007; Kamphaus, Huberty, DiStefano & Petoskey, 1997; Saunders et al. 2000). These are studies attempting to identify homogeneous subgroups of children to develop typologies for the classification of children's behavior problems.

There are found three identified subtypes of behavior problems concerning pre-schoolers (Beg et al. 2007). The first subtype is relatively free of any significant behavior problems and the second subtype indicated significant problems with inattention in the absence of any significant externalizing behaviors.

The third subtype was characterized by significant disruptive behaviors like aggression and hyperactivity, deviant externalizing behaviors and deficits in adaptive behaviors such as social skills, which represents a behavior referred to as disruptive behavior problems.

1.3 Behavior problems in school

Behavior problems in school are visible. The children with behavior problems are often unresponsive to the demands of schooling which require sharing and cooperating, accepting limits, interacting positively with adults and peers, self-regulating behavior, listening to others, focusing attention and engaging in academic tasks. (Walker et al, 2009). Teachers are constantly challenged by these children.

In school environment, misbehavior is a commonly used concept. Children's misbehavior has different forms. Most familiar are restlessness and hyperactivity, defiance of adults, lack of self-regulation which produces other forms of misbehavior like frequent off-task activities and disruptiveness in the classroom, even aggression. (Schiff and BarGil, 2004; Zimmerman et al. 2013). Any behavior being sufficiently off-task, distracting the teacher and/or class peers from on-task can be described as disruptive (Nash et al. 2015). The behavior problems can be troublesome for both teacher and children without being in the clinical range.

Misbehavior is common in school life (Zimmermann et al, 2013). Nash et al. refer to Layard and Dunn's (Layard, R., and Dunn, J., 2009.) inquiry, which shows that 29 percent of 11 - 14 years old children living in metropolitan areas in United Kingdom reported about daily disruption by peers in a classroom. 43 percent of pupils told how classmates' noise made it often or even always hard to concentrate in class. The situation is not any better in Finland. Majority of teachers (71 %) find that the classroom behavioral climate in schools has weakened. In the latest PISA - survey it was found that Finnish pupils were rated as third last considering classroom behavioral climate among over 60 countries.

In the same PISA – survey two third of principals considered the disruptive behavior significantly impeding learning. (Niilo Mäki Instituutti, <https://urly.fi/JDR>, referred 20.2.2017).

1.4 Relationship between behavior problems and academic achievement

It is usually thought that behavior problems and low school performance form a thread where both cause the other. Variety of behavior problems has been linked to low academic achievement (Barriga et al. 2002; Henricsson & Rydell 2006). Different forms of antisocial behavior seem to display lower academic performance. It is found that children with emotional, mental or behavior disorder had lower scores in reading and math than children without those disorders (Spernak, Schottenbauer, Ramey & Ramey, 2006). Instead, the ability to regulate behavior and expressing e.g. emotions, has been found to indicate teacher reported academic success, productivity in classroom and good performance in standardized literacy and math tests (Graziano, Reavis, Keane & Calkins, 2006).

Behavior problems are also associated with problems in learning. Referring to learning difficulties means essential problems in organizing, absorbing, remembering and understanding information. Learning difficulties vary in severity. They have an effect on many skills, such as language skills, reading, writing and learning mathematics. The prevalence of difficulties varies depending on the definition, but 3-6 % of all pupils are estimated to suffer from some kind of learning difficulty (Klassen, 2007). The diagnosis of learning disability requires a discrepancy in a certain area of learning compared to the person's general cognitive ability. When academic performance is below the normative age level, but does not diverge from a person's general cognitive ability, the term academic underachievement is used (Barriga et al. 2002). Low school performance in turn is based on teacher-evaluated outcomes which is based on the objectives defined in the curriculum.

Adolescents with learning disabilities can be expected to have a higher risk or vulnerability to have behavior problems and show more maladjustment problems compared to their non-learning disability peers (Al-Yagon 2007; Al-Yagon 2015). Peer rejection and loneliness, low self-concept, high levels of depression and anxiety, more behavioral problems, and more withdrawn behaviors are more common among children with learning disorders than their typically developing peers (Al-Yagon 2007). Delinquency, risk-taking and aggression are also in the risk list. (McNamara et al. 2008).

Externalizing behavior problems, aggression in children in early schoolyears, delinquency and conduct disorder in adolescents have been commonly associated with verbal learning disorder. There is found a connection between reading disabilities and behavior. The children with verbal learning disorders are twice more likely to exhibit clinical levels of behavior problems than children without verbal learning disorders (Yu, Buka, McCor-mick, Fitzmaurice & Indurkha, 2006). Instead, there was found no significant connection between nonverbal learning disorder and any type of behavior problem. Yu et al. point out, that since the majority of learning disabilities contains disabilities in reading or verbal skills, many of the studies examining the relationship between general learning disorder and behavior are in fact examining the probability of behavior problems among children with verbal learning disorder.

The bidirectional relationship between academic achievement and externalizing behavior problems is also been studied. It is found that students which teachers reported showing externalizing behavior problems had low scores in reading and spelling skills the year after. Instead, no evidence of a reverse relation; academic underachievement predicting behavior problems, was found (Richards, Symons, Greene & Szuskiewicz, 1995). It is also suggested that the variety of behavior problems can coexist with low academic achievement, but that they don't necessarily directly influence on it (Barriga et al. 2002).

Externalizing behavior problems have found effecting school grades. In turn, worse grades contribute to increase the externalizing behavior problems (Zimmerman et al. 2013). If continuing, externalizing behavior may lead to poor

school achievement, because it distracts pupils from engaging in academic school activities (Breslau et al. 2009). According to Zimmerman et al. (2013) the problem behavior and low achievement are overlapping even when IQ, sex, ethnicity, days absent from school and family structure have been controlled.

Also teacher evaluated attention, internalizing and externalizing behavior problems at the age of six have found to predict significantly lower scores in math and reading performance as far as at the age of seventeen (Breslau et al. 2009). The teacher evaluations of a child's symptoms have found to predict the academic outcomes as far as eight years later (Sourander & Helstelä, 2005).

The behavior problems in school damage the classroom behavioral climate, which in turn weakens the concentration on the present task. According to the international PISA – survey there is a connection between classroom behavioral climate and learning outcomes (National board of education, 2009, <https://urly.fi/JDT>, referred 19.2.2017). The more restless the learning situation is, the weaker are the learning outcomes. Also students' reports of classmates' disruptive behavior are found negatively related to students' school performance, even when the student, classroom, and school characteristics, including students' prior achievements, are controlled (Blank & Shavit, 2016).

1.5 Stability and trends in childhood behavior problems

Behavior problems are usually considered as quite stable and ubiquitous feature of childhood. At some point in development, almost all children experience circumstances and contexts where they have difficulties controlling their impulses and emotions and they have to struggle to be able regulate their behavior (Maggin, Wehby, Farmer & Brooks, 2016). Despite that especially externalizing behavior problems are found to be high in individual stability (Hammarberg & Hagekull, 2006). There is evidence of the stability of behavior problems even if there would have been a decrease in the amount of problem behavior. Children with behavior problems (both external and internal) in the 1st grade were found to have higher problem levels still in grades 3 and 6 than children with no be-

havioral problems (Henricsson & Rydell, 2006). Also in the behavioral problem groups the problem level decreased, whereas the non-problem group sustained low problem levels up to grade 6. Both children with internalizing and externalizing behavior problems had lower social competence, lower school achievement and peer acceptance in sixth grade than the group without behavior problems (Henricsson & Rydell, 2006). The problems seem to congest in the long run.

The stability of behavior problems is also shown in a situation where the amount of problem behavior was increasing (Spernak et al. 2006). The incidence of the disorders considering children with emotional, mental or behavior problems increased by the third grade in school. Also teacher reported conduct problems have found independently predicting externalizing problems as far as eight years after (Sourander & Helstelä, 2005).

In the light of earlier studies it seems that despite the trend of behavior problems during the first grades of school the problems itself are quite permanent. The continuity and stability of behavior problems across school years can severely disrupt a student's academic success and social-emotional adjustment. The long-term negative outcomes associated with maladaptive forms of behavior are serious (Walker et al, 2009).

1.6 Gender differences in problem behavior

It is assumed that the prevalence of behavior problems is higher in boys than in girls. These possible differences in behavior problems might be expected to be identified in the early grades of school.

It is found that boys would have almost twice the difficulty in conduct problems than girls and that they are also more likely to experience difficulties with prosocial behavior and peers (Hayes, 2007). There are also studies showing that boys are more frequently referred for psychoeducational assessment than girls because of behavior problem. According to Scituito, Nolfi and Bluhm (2004) the likelihood of referring the child for an evaluation is influenced by child

gender. Teachers were more likely to refer boys than girls for all behavior problems symptom types, but the discrepancy was significantly larger considering hyperactive behavior problems. Teachers were approximately 1.5 times more likely to refer a hyperactive boy than a hyperactive girl (Sciutto et al., 2004).

Hammarberg and Hagekull (2006) examined the gender differences in the change of problem behavior status over the schoolyear. They investigated changes in teacher rated externalizing and internalizing behavior problems in 6-year-olds and found that there were significant increases in children's externalizing and internalizing behaviors over 8 months. A positive change in externalizing behaviors was more often seen in girls than in boys. Boys were found to be more prone to a negative change of both types of behavior problems.

There are also opposite results showing that the behavior problems are not male limited (Farris, Nicholson, Borkowski & Whitman, 2010). Although the preschool-age boys are rated having more externalizing behavior problems and diagnosed with a behavior disorder than girls, it is also found that ODD diagnosed preschooler boys and girls had more similarities than differences regarding the origin and development of their behavior problem (Nixon, 2008). There was no difference in terms of concurrent behavior problems, as rated by either parents or teachers.

2 RESEARCH QUESTIONS

The purpose of this study is to find out if there are changes in behavior problems in the early grades of school and if there are connections between gender, special education status and the level or the change of behavior. The aim is also to find out if the 1st grade behavior problems predict the school performance in the 2nd grade. The specific research questions are the following:

1. Is there a change in the average level of behavior problems from 1st to 2nd grade?
 - a) Is there a connection between gender and the level or the possible change in behavior problem?
 - b) Is there a connection between intensified support given in school and the level or the change of behavior problems?
2. Do the behavior problems evaluated by SDQ in 1st grade predict the school performance in reading, writing or mathematics in the 2nd grade?

3 METHODOLOGY

3.1 The participants, procedure and ethics

The data for this study is collected for a wider project called ISKE (Eastern Finland special education development) considering inclusion that studies learning, behavior and attention problems in Finnish schools. The project was financed by Finnish Board of Education. The data is collected years 2010-2012 from seven different municipalities. 30 schools and 57 classes took part to the study. Altogether there were 840 1st grade pupils. The distribution between genders was equal: there were 50% girls and 50% boys. In this research is used the data collected initially from 311 1st grade pupils who are from a random sample taken from each class for rating of their individual behavior by the teacher. If there were less than six pupils in the class that had got the informed consent to participate in the research by their parents, rating was done to all the pupils that had the permission. The teachers were also asked to evaluate pupils' reading, writing and math performance by school grades from 4-10. The follow-up measurement was made to the same pupils in the 2nd grade.

The researchers took contact with every school in each of the participating municipalities and found out, which of the teachers were interested to take part to the study. The teachers participating in the project gave to parents the letters informing them of the research purpose and asking for their consent for their child to participate. Also the benefits and possible costs of participating were described. The parents were advised to talk about the research with their children to make sure the pupils understood what they took part in and to confirm the participation. The attendance to the study was voluntary and the pupils had the right to discontinue their participating. The data was collected during the school day. All the data about pupils were saved and processed anonymously.

The researchers delivered the SDQ-questionnaires to schools to collect the data and the participating staff were given instructions to implement the questionnaires. In case any questions would appear, the researchers advised the teachers to contact the researchers. The teachers had five schooldays to answer the questionnaire. Because the 1st and 2nd graders are not usually evaluated numerically, the teachers were separately asked to evaluate the pupils' reading, writing and mathematics performance using the normal school grades from 4 to 10.

This study examines the behavior problems in school context. Behavior problems in this study are defined in this study as symptoms of conduct disorder occurring in school and evaluated by a class teacher. This information is not adequate for making a diagnosis of Conduct Disorder and thus the ratings are used as a continuous variable. In this study the performance in reading, writing and math are also evaluated by a class teacher.

This study includes also information on students who received part-time special education during the first grade, for whatever reason. It is worth noting that after the first measurement the special education systems went through a reform into the current three-tiered support system. Thus this study includes students from Tier 1 (universal support) and Tier 2 (intensified support). Students identified as having special needs (Tier 3, special support) were excluded from the study, because the group was so small.

3.2 Reliability

SDQ questionnaire

The SDQ questionnaire is commonly used in several different countries. SDQ is a screening questionnaire for 3-16 year-old children. It can be filled in by parents and teachers. 11-16 year-old children can complete it themselves. (Borg, Salmelin & Kaukonen, 2014.) The questionnaire is a one to two-page format, easily available (www.sdqinfo.org, referred 22.5.2015) and free of charge. SDQ was designed practical aspects in mind to make the use of it simply as possible.

SDQ is commonly used both in for screening in community and research settings and clinical settings in different countries and cultures (Borg et al. 2014.)

The items of the SDQ are scored 1 for 'somewhat true' and 0 or 2 for 'not true' or for 'certainly true' depending on the item. In the impact supplement there is asked if the child has any emotional or behavioral difficulties and if so, about the duration or chronicity of the difficulties, overall distress, social impairments and burden to others. The items on overall distress and social impairment are scored from 0 to 2 (Borg et al. 2014.)

Borg et al. (2014) examined the feasibility of the SDQ in natural surroundings in Finnish pre-school education, school and primary health care. They found that 83% of teachers taken part to the study considered the SDQ very or fairly age appropriate for assessing the child's psychosocial well-being and 93% of teachers found the SDQ not at all or not much burdensome. The psychometric properties of the SDQ are confirmed in a large population sample of children aged 5 - 15 years (Borg, Salmelin, Kaukonen, Joukamaa & Tamminen, 2012). Koskelainen, Sourander and Kaljonen (2000) in turn studied the feasibility of SDQ on Finnish 7-15 year old children. The study showed the SDQ being a good screening instrument promoting early identification of psychiatric disorders.

Teacher evaluated behavior problems

Externalizing behavior is found to have apparent effects on teacher's judgments of students' achievements which also can severely hinder academic achievement (Zimmerman et al. 2013). There are also references of students' misbehavior being an influential factor in teachers' decisions to refer a student (Abidin & Robinson 2002). Academic-related problems are commonly believed to be the primary reason for referral though it is not clear whether academic competence or behavioral problems are the primary factors influencing referrals.

The possible influence of a child's gender on teachers' reactions to ODD has been studied. There was found no connections between child's gender and teachers' ratings of severity or disruptiveness or responses to oppositional be-

havior (Kelter and Pope, 2011). There was only one gender difference found and it indicated that the likelihood of teachers calling to a girl's parents considering disruptive behavior was bigger than calling to a boy's parents.

However, it is shown that the best predictors of teachers' referral decisions are teachers' evaluations about the students' academic competence and the presence of students' behavior problems (Abidin & Robinson, 2002). Teachers' perceptions of students are based on observing students' behavior. The perceptions should not be reflections about teachers' subjective judgements. The teachers' judgements about the student's social skills and behavioral adjustment increased in severity as the student's off-task behavior increased (Abidin and Robinson, 2002). Based on these findings it seems that teachers' ratings about students' behavior are independent and consistent observations of pupils' actual classroom behavior.

Elementary classroom teachers are often used as main informants considering the children's behavior in school, because they have the opportunity to observe the children widely in different situations and at different times during schooldays (Kelter and Pope 2011).

The Teacher evaluated school performance

The teacher's evaluation about the school performance in reading, writing and mathematics is considered reliable, because the teacher has experience about evaluating pupils. The teacher's evaluation about the school performance is actually a teacher's evaluation of how the child has attained the goals of the curriculum.

3.3 Analyzing the data

The data was analyzed with SPSS 22 -program. The correlation between SDQ values and school success was checked by Spearman correlations because of the skewness of the SDQ data. The possible change in behavior (SDQ) from 1st to 2nd grade and the connections between SDQ measured behavior at 1st grade and

both gender and special education support (tiers 1, 2 and 3) were analyzed with repeated measures multivariate variance analyses (MANOVA). From the three tiers the tier 3 was left out of this analyze, because the amount of pupils in tier 3 with SDQ evaluation was very small (46 pupils). The last research question considering the SDQ-measured behavior at 1st grade predicting the skill level in writing, reading and math on 2nd grade was analyzed with hierarchical regression analysis. The skill level on the 1st grade was controlled to find out only the impact of behavior. In the hierarchical regression analysis the logarithm variables of the SDQ values were used.

4 THE RESULTS

4.1 The descriptive results

The means and standard deviations of behavior problems in 1st and 2nd grade grouped by gender and special education status

Table 1. Means and standard deviations of behavior problems in 1st and 2nd grade grouped by gender and special education status.

	Girls	Boys	Tier 1	Tier 2
Behavior problem 1st grade	.11 (.19) (N145)	.20 (.23) (N156)	.14 (.19) (N159)	.18 (.25) (N96)
Behavior problem 2nd grade	.12 (.22) (N94)	.21 (.26) (N104)	.15 (.24) (N107)	.21 (.27) (N69)

Boys have more behavior problems both in the 1st grade and 2nd grade than girls ($t(299) = -2,998, p = .003$) and ($t(196) = -2,632, p = .009$). There are no differences between tier 1 and 2 student in the level of behavior problems either in the 1st grade or 2nd grade ($t(253) = -.483, p = .630$) and ($t(174) = -1,708, p = 0,90$). Tier 2 pupils have almost equal amount of behavior problems as boys.

The Pearson correlations between all the variables

From the table 2 can be seen the Pearson correlations between all the variables.

Table 2. The Pearson correlations between all the variables.

	1	2	3	4	5	6	7	8	9	10
1 Gender	1									
2 Special education 1st grade	.25**	1								
3 Reading 1st grade	-.19**	-.41**	1							
4 Writing 1st grade	-.28**	-.46**	.78**	1						
5 Math 1st grade	-.12*	-.26**	.59**	.61**	1					
6 Reading 2nd grade	-.14	-.29**	.75**	.59**	.46**	1				
7 Writing 2nd grade	-.31**	-.40**	.60**	.71**	.46**	.71**	1			
8 Math 2nd grade	.05	-.22**	.46**	.53**	.71**	.51**	.49**	1		
9 Behavior 1st grade	.17**	.12*	-.07	-.11	-.03	-.05	-.18*	-.08	1	
10 Behavior 2nd grade	.19**	.21**	-.02	-.14	-.07	-.13	-.24**	-.15*	.63**	1

***p<.001**p=0.1*p=.05

The Pearson correlation was run to show the correlation between the behavior problems in the 1st and 2nd grade. The correlation was quite high ($r = .63$) which indicates the relative stability of behavior problems. From the table 2 it can be seen, that 1st grade behavior problems indicated lower school performance in writing, special education in 1st grade and behavior problems in 2nd grade.

It can be also seen, that special education in the 1st grade indicated behavioral problems in the 2nd grade. It also indicated lower school performance in reading, writing and mathematics both in 1st and 2nd grade which is understandable, because the children with lowest performance are selected to special education. Writing in the 1st grade was most affected, which means it was the most common reason for getting special education. The school performances in all three subjects correlated among themselves; weak school performance in one subject indicated quite weak school performance in the two other subjects too. The biggest correlation was between reading and writing in the 1st grade.

The 1st grade school performance always indicated the 2nd year school performance. The school performance in a subject in the 1st grade affected the school performance in the 2nd grade. The highest correlation was between reading in 1st and 2nd grade.

Behavior problems in the 2nd grade indicated lower school performance in writing in the 2nd grade.

Gender was connected with special education in the 1st grade, with reading and writing in the 1st grade, with writing in the 2nd grade and with behavior both in the 1st and the 2nd grade.

4.2 The results of the statistical analyses of changes between 1st and 2nd grade

The change and level of behavior from 1st to 2nd grade and the effect of gender and special education status on the level and possible change in behavior problems

Repeated measures anova showed that there was no change in the level of behavior problems between 1st and 2nd grade ($F(196,1) = 1,23$, $p = ,27$, partial eta $,01$). Interaction of time and gender was not significant either ($F(196,1) = ,04$, $p = ,84$, partial eta $,00$) indicating that the developments in the level of behavior problem remained similar between genders. However there was a difference between boys and girls in the average level of behaviors problems ($F(196,1) = 7,99$, $p = ,005$, partial eta $,04$). Boys had more behavior problems than girls (see table x). The interaction of time and special education status ($F(174,1) = ,20$, $p = ,66$, partial eta $,001$) neither the level of behavior problems between pupils having or not having special education ($F(174,1) = 2,76$, $p = ,10$, partial eta $,02$) were not significant.

The effect of behavior problems in the 1st grade on the school performance in the 2nd grade

In the tables 1, 2 and 3 there can be seen the effects of the 1st grade behavior problems on the school performance in reading, writing and mathematics in the 2nd grade.

Table 3: 1st grade behavior problems as predictor of 2nd grade reading

	Std. β	R ²	ΔR^2
Step 1:			
1 st grade reading	.752***	.565	
Step 2:			
1 st grade reading	.752***		
1 st grade behavior	.004	.565	.000

Notice. *** $p < .001$, ** $p < .01$, * $p < .05$. β = standardized regression coefficient; R² = the coefficient of determination of estimated model, ΔR^2 = change of the coefficient of determination (R²), when all the variables of the step are within the model.

The 1st grade behavior problems did not predict the school performance in reading in the 2nd grade.

Table 4: 1st grade behavior problems as predictor of 2nd grade writing

	Std. β	R ²	ΔR^2
Step 1:			
1 st grade writing	.707***	.500	
Step 2:			
1 st grade writing	.702***		
1 st grade behavior	-.109*	.512	.012*

Notice. *** $p < .001$, ** $p < .01$, * $p < .05$. β = standardized regression coefficient; R² = the coefficient of determination of estimated model, ΔR^2 = change of the coefficient of determination (R²), when all the variables of the step are within the model.

Behavior problems in the 1st grade predicted lower school performance in writing in the 2nd grade. As seen from table 4, the 1st grade behavior increased 1,2 % of the variation of school performance in writing (together behavior and 1st grade skill explained 51,2 % of the variation). Although the change in variation was small, it was statistically significant.

Table 5: 1st grade behavior problems as predictor of 2nd grade math

	Std. β	R ²	ΔR^2
Step 1:			
1 st grade math	.713***	.508	
Step 2:			
1 st grade math	.713***		
1 st grade behavior	-.024	.508	.001

Notice. *** $p < .001$, ** $p < .01$, * $p < .05$. β = standardized regression coefficient; R2 = the coefficient of determination of estimated model, ΔR^2 = change of the coefficient of determination (R2), when both variables of the step are within the model.

The 1st grade behavior problems did not predict the school performance in mathematics in the 2nd grade.

On the first step of the hierarchical regression analyses the explanatory variable in each subject was the school performance on the 1st grade. As expected, the school performance in the 1st grade explained half or more of the performance in 2nd grade in each subject: 56,5% in reading, 50% in writing and 50,8% in mathematics.

On the second step the 1st grade behavior was added as an explanatory variable. The school performance in each subject was controlled to find out if the 1st grade behavior had an effect on the variation of the performance.

5 DISCUSSION

5.1 Reviewing the results

The purpose of this study was to get more information about behavior problems and their consequences on school performance in the early grades of school. The study examined, whether there was a change in the average level of behavior from 1st to 2nd grade and whether there was a connection between gender or special education status and level or the change of behavior. 1st grade behavior problems as a predictor of school performance in reading, writing and math was also examined.

The change in the average level of behavior from 1st to 2nd grade. According to the results of this study there is no change in the level of behavior problems between the 1st and 2nd grade. Referring to this result, the behavior problems seem to be stable in the early grades of school. Also the correlations (Table 2) show, that the behavior problems in the 1st grade indicate the continuity of behavior problems in the 2nd grade. These results are consistent with some earlier studies (e.g. Henricsson & Rydell, 2006; Spernak, 2006) that also showed the stability of the behavior problems from 1st grade even as far as to the 6th grade. According to a study that examined 6-yearolds (Hammarberg and Hagekull, 2006) the externalizing behavior problems increased over 8-months, when rated by teachers in the beginning and the end of a schoolyear. It seems that behavior problems are quite stable or at least permanent despite the trend of behavior.

The effect of gender on the level and the change in behavior problem. According to previous study (Hammarberg & Hagekull, 2006), there were gender differences in the change of problem behavior status over the schoolyear. Girl's externalizing behavior trend was positive more often than boys' meaning, that girls ended up showing less externalizing behavior problems over a schoolyear than boys. In turn, boys were found to be overall more prone to a negative

change of both types (externalizing and internalizing) of behavior problems. In this study there was not found a corresponding difference. In turn, the interaction of time and gender was not significant. The development of the behavior problem level was similar between boys and girls.

In this study there was found a difference in the average level of behavior problems between genders, as boys were found to have more behavior problems than girls. The difference between boys and girls in the average level of behavior problems is consistent with the descriptive results in tables 1 and 2. According to table 1 (*Means and standard deviations of behavior in 1st and 2nd grade grouped by gender and special education status*) the boys have more behavior problems than girls both in the 1st and 2nd grade and according to table 2 (*The Pearson correlations between all the variables*) there is a connection between gender and behavior both in the 1st and the 2nd grade. Previous studies are consistent with the result (Hayes, 2007; Nolfi & Bluhm, 2004). However, the same table shows that tier 2 pupils have almost equal amount of behavior problems as boys.

The effect of special education status on the level and change in behavior problems. The interaction of time and special education status neither the level of behavior problems between pupils having or not having part-time special education or intensified support were not found significant in this study. The level and the trend of behavior stayed the same despite if the student was having intensified support or not. Studies say that children with learning disorders are more vulnerable to have behavioral problems than children with no disorders. (Al-Yagon 2007; Al-Yagon, 2015; Breslau et al. 2009; Richards et al. 1995; Yu et al. 2006; Zimmermann et al. 2013.) However, according to table 2 in (*The Pearson correlations between all the variables*) special education in 1st grade indicates behavior problems in the 2nd grade. According to previous studies (Barriga et al. 2002; Henricsson & Rydell, 2006; Spornak, 2006) behavior problems indicate lower academic achievement.

The effect of behavior problems in the 1st grade on the school performance in the 2nd grade. According to the results in this study the behavior problems in the 1st grade predict a lower school performance in writing in the 2nd grade. Instead,

the 1st grade behavior problems did not predict the school performance in reading or mathematics in the 2nd grade. From the descriptive results (Table 2) it can also be seen, that behavior problems in the 1st grade indicated lower school performance in writing in the 2nd grade, which is consistent with the result in table 4. The earlier studies have showed the connection between behavior problems and reading disabilities (Yu et al. 2006), but not a specific connection to lower school performance in writing. But then, it is shown that the teacher reported externalizing behavior problems indicated low scores both in reading and spelling skills (Richards et al. 1995). According to table 1 special education also indicates behavioral problems both in 1st and 2nd grade which in turn indicates lower school performance in all three subjects both in the 1st and 2nd grade. Overall the behavior problems in the 1st grade seem to be connected to school performance in the 2nd grade and are overall consistent with earlier studies (e. g. Barriga et al. 2002; Henricsson & Rydell, 2006; Richards et al. 1995).

5.2 Supporting behavior at school

Different conditions and circumstances outside school can contribute the behavior problems emerging at school (Walker et al. 2009). However, school cannot remove the problems that occur outside school. Instead, school should take the chance to prevent the behavior problems in terms of schooling. A special focus on the disruptive classroom behavior as hindering school performance and learning climate in the classroom is needed (Blank & Shavit, 2016).

In the Finnish school context the way the school recognizes a child's need for support is more based on school performance than on behavior problems. The support is focused on learning difficulties rather than on the behavior problems. Also in referring pupils for special education specifically the academic factors are considered as the reason for referring in the early grades of school. The emphasis has been especially on rehabilitating difficulties in reading, writing and speech (Kirjavainen, Pulkkinen & Janhukainen, 2013, <https://urly.fi/JDO>, referred 22.2.2017). Difficulties in learning are recognized

in an early stage and the support system is flexible: when there is a problem noticed, it is intervened as soon as possible.

According to this study, there are not big changes in behavior problems during the first two grades of school. Despite that, already the behavior problems in the 1st grade of school affect negatively the school performance later. Also it is known that the behavior problems are especially damaging when they are comorbid with learning disorders (Al-Yagon, 2007; Al-Yagon 2015; McNamara et al. 2008). The Finnish school system should be able to recognize and intervene the behavior problems as early as the problems in learning and academic skills are recognized and intervened. There should be ways to support behavior already in general support (tier 1) to prevent the problems from escalating and damaging the classroom behavioral climate, not to mention the negative effects on individual children.

The new national core curriculum came into effect in 2016 emphasizing the community in supporting learning and usually schooling, which includes supporting behavior. The basis of arranging the support in school are the strengths, learning and development needs of a pupil or an education group. At first the school's way of operating, the teaching arrangements and the learning environment and their suitability for the pupil has to be regarded (The national core curriculum 2014, <https://urly.fi/vRf> , referred 18.2.2017). Based on these it is evaluated if changing or modifying these circumstances is possible to implement pedagogical solutions that are more suitable for the pupil.

In the context of supporting behavior in the general support level, the basis is in improving the classroom behavioral climate, environment and the circumstances to create positive models of behavior. The focus is not only in the individual, but more in the communal level. Supporting learning and schooling means not only meeting the individual needs, but also communal and learning environment related solutions (The national board of education, 2010, <https://urly.fi/JE5> , referred 18.2.2017).

Also the purpose of the support as preventing the problems from increasing complexity and getting deeper (National core curriculum, 2014, <https://urly.fi/vR>, referred 18.2.2017) means that the behavior problems should be recognized and intervened proactively before they escalate and affect negatively the learning outcomes. In practice it means intervening in the general support level (tier 1). Usually general support means single pedagogical solutions and arrangements, guidance and support as a means to effect the situation as early as possible as a part of the everyday life at school. (The national board of education, 2010, <https://urly.fi/JE5> , referred 18.2.2017).

According to national core curriculum (<https://urly.fi/vR> , referred 18.2.2017), it is also important to support the pupil's positive understanding of oneself and the schoolwork. The pupil's possibilities to get experiences of success and working as a member of group have to be taken care of. When wanting to meet these demands of supporting behavior the positive behavior support would be a reckoned option to manage the behavior problems in general support level in practice. With appropriate support, many children having momentary behavioral problems will go on experiencing adequate adjustment and positive outcomes (Maggin et al, 2016).

5.3 Positive behavior support

As the negative outcomes of behavior problems can be seen already in the early grades of school and the cumulative, escalating effects are evidently known, the preventing and proactive strategies should be developed and implemented before the problems escalate.

Managing classroom behavior is a universal challenge for teachers (Nash et al. 2015). There are big challenges in meeting the behavior problems in children and adolescents. However there is a lot of information about effective interventions and practices that should be implemented and sustained over time (Kern, 2015). The interventions considering reducing behavior problems in

school should be collaborative arrangements including and engaged by school staff and peers, parents and caregivers, child behavior experts and, if possible community agencies (Walker et al, 2009).

Proactive strategies instead of reactive strategies are launched in schools to prevent the misbehavior before it even starts and escalates. Class-wide intervention as a proactive strategy in improving learning climate has been found as a significant way of reducing disruptive behavior in a classroom (Närhi et al. 2015).

It is shown that the student discipline problems decreases and school performance improves when following a positive behavior support intervention (Luiselli, Putnam, Handler & Feinberg, 2005). The positive behavior support intervention includes the school's whole student population a prevention focus in mind. It emphasizes both the social and academic competence and stresses positive reinforcement. It involves the cooperation of school administrators and evaluates the outcomes of the intervention (Luiselli et al., 2005). The assumption is to have more time for schools to implement effective instructions and teaching by improving social behavior (Gage, Sugai, Lewis & Brzozowy, 2005).

According to Sutherland, Conroy, Abrams and Vo (2010), children having problem behavior have not learned the social competence skills, which are thought to be improved by the positive behavior support intervention. The school also offers an environment where the children can strengthen their skills. Strengthening the social skills is seen as a way of increasing positive classroom atmosphere by decreasing the problem behavior in classroom settings (Sutherland et al., 2010).

To implement the positive, schoolwide behavior support efficiently the multi-dimensional approach is required. It should be focused on universities and school districts and that way it should eventually reach the teachers, administrators and school-based mental health professionals. Convincing the school staff to take ownership of all students is also important (Kern, 2015). The knowledge should be shared in teacher training and to teachers in service and make sure the practices are implemented accurately.

The educational system has a significant role in the early recognition and intervention of behavior problems since the teacher evaluated behavior problems predict the academic outcomes as far as eight years later (Sourander & Helstelä, 2005). According to National Board of Education (2010) there studies showing that the teacher is in a key position in building and sustaining the classroom behavioral climate. The teacher education considering classmanagement and building classroom behavioral climate should be reviewed. As behavior problems being an everyday problem in a classroom and their consequences being crucial, the teacher's ability in managing these problems should be among priorities.

5.4 The reliability, validity and the limitations of the study

The longitudinal study design is one of the strengths of this study. Due to it, it is possible to predict the effects of variables examined in the long run. The indicators of the study can be considered as reliable. SDQ is an international, widely used indicator and it can be assumed to be relevant in measuring what it is supposed to measure. According to Goodman (2001) the reliability and validity of the SDQ makes it a brief, useful measure of the adjustment and psychopathology of children and adolescents. Using SDQ can be considered as a strength of this study because of its' generally proven suitability.

The teachers can be considered as a reliable source in terms of evaluating the pupils' behavior problems (Kelter & Pope, 2011). The reliability of the study could have been increased by parents' evaluations about behavior problems. The teacher-evaluated skill level can also be considered as reliable, although the objective, standardized tests considering skill level and academic performance would have increased the reliability.

The data used in this study was large enough, but on the other hand the amount of pupils with behavior problems was naturally small compared to the amount of pupils without behavior problems. Also the amount of tier 3 pupils (special support) was so small, that it had to be left out of the study.

In terms of validity it should be noted that the results cannot be reliably generalized in national level, because the data is collected from seven different municipalities in eastern Finland. Also when comparing the results with other studies it should be noted that the behavior problems in this study are not diagnosed, neither the deficits in skill levels in reading, writing and math.

The teachers' evaluations about behavior problems were used as a continuous variable, which also restricts the validity of the study, despite the complexity of defining a possible cut-off point. The methods of analyzing the data were relevant in relation to the variables.

5.5 Further research challenges

Based on this study the negative effect of behavior problems on school performance can be seen already in the second grade of school. More research needs to be done considering the effects of behavior problems in the early grades of school. Mostly the studies done are considering diagnosed behavior problems and / or diagnosed learning disabilities, whilst the connection between teacher-evaluated school performance and behavioral problems remains untouchable, leaving out the most common, classroom behavioral climate affecting everyday school life issues.

The high continuity of behavior problems from childhood to adolescence has found to be substantial (Sourander and Helstelä, 2005). This study showed also the stability of behavior problems. The older the child having behavior problems grows, the more radically the negative effects of behavior problems show out. The effects congest and the adolescents make decisions highly affecting their lives. There is a need for research considering early recognition and intervention for early grades behavior problems.

The teachers have been found in the key-position in building and sustaining the classroom behavioral climate (The National board of education, 2010). Studying the means they have in preventing and intervening behavior prob-

lems would be interesting and also beneficial in terms of teacher education, which should be also reviewed considering class management, classroom behavioral climate and the ability to meet the behavioral problems of children in nowadays heterogeneous classrooms.

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