Teacher Strain and its Relation to Experienced Fidelity, Effectiveness, and Acceptability of the Intervention

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ABSTRACT

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This study focused on teacher strain and its relation to teacher self-estimated fidelity, effectiveness, and acceptability of the class-wide intervention to reduce disruptive behaviour. Effectiveness was measured with teacher-experienced changes in disruptive behaviour during the intervention. The participants (N = 208) were Finnish middle school teachers, and the data was from the intervention (*Työrauha kaikille*). The effectiveness of the intervention was indicated earlier. Hierarchical regression analysis was used and background variables were controlled in it.

The main result in this study indicated that teacher strain explained the changes of disruptive behaviour negatively but disruptive behaviour before the intervention changed the direction: **the more teacher experienced strain before the intervention and the less teacher experienced disruptive behaviour, the less effective the intervention was experienced to be by the teacher.** Teacher strain did not explain the self-estimated fidelity or the acceptability of the intervention.

The disruptive behaviour before the intervention had clearer effect on effectiveness than teacher strain. Then again, correlation between teacher strain and changes of disruptive behaviour indicated that the more teacher experienced strain, the more effective intervention was experienced to be. In conclusion, classroom management is more important than coping strategies for strain because it has a decreasing effect on both disruptive behaviour and teacher strain.

Keywords: teacher overload, disruptive behaviour, behavioural environment, Finnish comprehensive school, middle school.

TIIVISTELMÄ

Haapamäki, Saara. 2022. Opettajan kuormittuneisuus ja sen yhteys intervention koettuun fideliteettiin, tehokkuuteen ja hyväksyttävyyteen. Kasvatustieteen pro gradu -tutkielma. Jyväskylän yliopisto. Opettajankoulutuslaitos. 37 sivua.

Tämän määrällisen tutkimuksen keskiössä oli opettajan kuormittuneisuus ja sen yhteys koettuun fideliteettiin, tehokkuuteen ja hyväksyttävyyteen luokkatasolle suunnitellussa käyttäytymisinterventiossa. Tehokkuus mitattiin käyttämällä opettajan kokeman häiriökäyttäytymisen muutosta intervention aikana. Osallistujat (N = 208) olivat suomalaisia yläkoulun opettajia ja aineisto on osa Työrauha Kaikille -tutkimusta. Intervention tehokkuus on todettu aiemmissa tutkimuksissa. Hierarkkista regressioanalyysia käytettiin ja taustamuuttujat kontrolloitiin.

Päätulokset osoittivat, että opettajan kuormittuneisuus selitti häiriökäyttäytymisen muutosta negatiivisesti, mutta häiriökäyttäytyminen ennen interventiota käänsi yhteyden: **mitä enemmän opettaja koki kuormittuneisuutta ennen interventiota ja mitä vähemmän opettaja koki häiriökäyttäytymistä, sitä vähemmän tehokkaana opettajat kokivat intervention.** Kuormittuneisuus ei selittänyt itsearvioitua fideliteettiä eikä intervention hyväksyttävyyttä.

Häiriökäyttäytymisellä ennen interventiota oli suurempi yhteys intervention tehokkuuteen kuin opettajan kuormittuneisuudella. Kuitenkin korrelaatio opettajan kuormittuneisuuden ja häiriökäyttäytymisen muutoksen välillä osoitti, että mitä enemmän opettaja koki kuormittuneisuutta, sitä tehokkaammaksi hän koki intervention. Yhteenvetona, luokan hallinta on tärkeämpää kuin kuormittuneisuuden hallintakeinot, koska luokan hallinta vähentää sekä häiriökäyttäytymistä että opettajan kuormittuneisuutta.

Hakusanat: opettajan stressi, häiriökäyttäytyminen, käytösilmapiiri, suomalainen peruskoulu, yläkoulu.

CONTENTS

1 INTRODUCTION

Earlier, interventions to reduce disruptive behaviour were arranged more in primary school context. This can be caused, for example, by preventive action on interventions. However, previous research (Zoromski et al., 2021) showed that there has been more disruptive behaviour in middle schools. It is important to allow for teacher strain because there is a relation with teacher strain and both teachers' and pupils' behaviour and wellbeing (Kinnunen, 1989, p. 10). Earlier studies focused more on the reasons for strain (e.g., Boyle et al., 1995; Harmsen et al., 2018) and its effect on teachers' own thoughts and wellbeing (e.g., Klassen & Chiu, 2010; Mäkinen, 1982).

In this masters' thesis, disruptive behaviour, and intervention for reducing disruptive behaviour is approached through teacher strain. In this context, teacher strain means stress occurring during teaching. Disruptive behaviour is defined as a part of classroom behavioural climate. According to Levin and Nolan (2007, p. 21), a disruptive behaviour 1) disturbs the possibilities to concentrate on learning, 2) disturbs teaching and learning situations, 3) threatens students' psychological and physical safety and 4) disturbs the physical environment of the classroom. In addition to that, also the effects of strain on self-estimated fidelity and acceptability of the intervention is studied. It is important to know how the possible teacher strain affect also on the implementation of the intervention and teacher experienced acceptability.

According to earlier studies, this class-wide intervention is effective and it reduces the disruptive behaviour in middle schools (Närhi et al., 2014; 2017). Also, it has been examined that fidelity, effectiveness, and acceptability of interventions are interrelated (e.g., Elliott, 1988). This thesis focuses on background factors, mostly to what is the effect of teacher strain to experienced changes of disruptive behaviour. The results of this thesis may offer information about how possible strain needs to be noticed before the implementation. Also,

the effects of teachers' experiences about fidelity and acceptability of the intervention is noticed.

1.1 Classroom Organisation and Management

In the Finnish Basic Education Act (BEA 628/1998) all children have rights and duties. In the context of a classroom climate, the main rights are to have a safe learning environment (BEA 7.29.1 §) and the right to express their own views and to be heard (Convention on the Rights of the Child, 1989). It is noted that children need to have interactions with other pupils, teachers, environments, and communities to understand how their own action affects on others and the environment (Finnish National Agency for Education, 2014, p. 17).

Many researchers have understood the classroom climate as a multidimensional construct. Wang et al. (2020) defined the classroom climate with three domains in their meta-analysis: instructional support, socioemotional support and classroom organisation and management. All these domains are associated with learners' education and psychosocial outcome. According to Wang et al. (2020), these domains are also interrelated. This multidimensional definition needs to be understood when focusing on disruptive behaviour.

Classroom organisation and management is the most important domain in the context of this master's thesis. It includes three dimensions: behaviour management, productivity, and instructional learning formats (Pianta & Hamre, 2009; Wang et al., 2020). Teacher's **behaviour management** should be in line with instructional goals, classroom activities and the features of the pupils (Emmer & Stough, 2001). This behavioural management includes for example clear expectations, predictability, and redirection (e.g., Epstein et al., 2008; Närhi et al., 2017). Second dimension, **productivity**, means efficient routines and transitions (Pianta & Hamre, 2009). Last dimension, **instructional learning formats** means variety of learning, noticing pupils' interests, clarity of teaching and approaches that offer opportunity to engage in learning. Emmer and Stough (2001, p. 103) noted that usually definitions about classroom organisation only pointed out the

actions that teacher does to create order, pupil engagement and reinforce their cooperation. Also, classroom organisation and management demand comprehensive knowledge on teachers.

Disruptive behaviour. Disruptive behaviour is essential for this master's thesis. Disruptive behaviour is a part of classroom behavioural climate, especially, classroom organisation and management: action can decrease the disruptive behaviours in the classrooms (Wang et al., 2020). Levin and Nolan (2007) defined the classroom behavioural climate with disruptive behaviour. They stated that a disruptive behaviour 1) disturbs the possibilities to concentrate on learning, 2) disturbs teaching and learning situations, 3) threatens pupils' psychological and physical safety and 4) disturbs the physical environment of the classroom (Levin & Nolan, 2007, p. 21). The national core curriculum highlighted that a good learning climate that is kind and unhurried can support pupils' learning (Finnish National Agency for Education, 2014, p. 30). On the other hand, disruptive behaviour prevents good classroom behavioural climate from occurring. That is why disruptive behaviour and changes on it are important to examine.

Teachers need to understand disruptive behaviour problems that they can use effective classroom management in the classroom (Levin & Nolan, 2007). Defining disruptive behaviour is not easy because individuals' own experiences and thoughts lead to what they experience to be disruptive and what not. According to previous research (e.g., Naukkarinen, 1999), teachers experienced pupils and their home conditions to be a problem, while pupils experienced teachers to be a problem. Naukkarinen's findings showed that problem solving was based on causality: teachers' demands about behaviour was directed only on pupils (Naukkarinen 1999, p. 63). Behaviour problems can be nondiscipline, discipline or evident discipline problems. This separation is based on earlier mentioned definition by Levin and Nolan (2007): Behaviour is defined to be a nondiscipline, when behaviour interferes only an individual pupil or teacher that acts disruptively. Behaviour is defined to be an evident discipline problem when a pupil interferes others with it and a teacher do not react and/or interferes others

with his/her reaction. With wrongly timed reaction, a teacher can be the discipline problem (Levin & Nolan, 2007, pp. 24–26). According to that separation, a teacher has an important role to react with the right way not wanting to be the discipline problem himself or herself (Holopainen et al., 2009; Levin & Nolan, 2007). Pupils' behaviour could not be forced to change because pupils control their behaviour themselves: a teacher could only change his/her own behaviour and influence pupils' behaviour with it (Kinnunen, 1989; Levin & Nolan, 2007).

According to the previous research the disruptive behaviour is a greater problem (e.g., Zoromski et al., 2021) and teacher wellbeing is lower (e.g., Mäkinen, 1982, p. 126) in the middle schools than in the primary schools. Regardless, the intervention studies about the disruptive behaviour are more common in the primary school context (Horner et al., 2010; Sugai et al., 2000). According to the PISA 2015 results (Välijärvi, 2017, pp. 24–25; 41), pupils in Finland experienced a little more bullying caused by other pupils than in other OECD countries. Also, bullying experiences and solidarity had a quite strong relation: approximately 1/3 of pupils that experienced bullying regularly experienced to be an outsider commensurate to school community. Välijärvi (2017, pp. 17–18) also pointed out that experienced solidarity has been decreased in Finland and other OECD countries, but it is still higher in Finland than in other countries. He discussed that strengthening the solidarity is important because it had a strong relation with classroom climate.

1.2 Evidence-Based Support for Reducing Disruptive Behaviour

Evidence-based support can be schoolwide (Epstein et al., 2000; Horner et al., 2010; Sugai et al., 2000) or class-wide (Evertson et al., 1989; Kern & Clemens, 2007; Oliver et al., 2011). Also, more individual interventions are used (Karhu et al., 2019). It is important to use right support for the right group of pupils (Oliver et al., 2011). Teachers' classroom management is important for pupils' behavioural but also academic outcomes (Simonsen et al., 2008). According to Levin and

Nolan (2007), any classroom management plan should be based on teachers' beliefs about teaching and learning. For structure and preventing support it is necessary to take individuals' needs for account and to respond to them (Oliver et al., 2011, p. 9). Classrooms with a lot of disruptive or aggressive behaviour risk pupils to more serious behavioural problems (Oliver et al., 2011).

In evidence-based support, making and teaching behavioural expectations and proactive strategies are important (Sugai & Horner, 2002). These are highlighted especially in the class-wide support (e.g., Närhi et al., 2017). The relevance of behaviour-specific praise was emphasised in classroom context (Epstein et al., 2008, p. 6): when it was given from appropriate behaviour it had a positive effect on whole class. When teacher praise peers, others model the behaviour that has been praised (Kern & Clemens, 2007, p. 68). In practice, when disruptive behaviour is noticed in the environment, it can be changed quickly (Kern & Clemens, 2007). Also, behaviour-specific praise is seen to be important for appropriate behaviour: teachers must help pupils to understand the connection between their action and consequences (Levin & Nolan, 2007). Examples and non-examples can clarify behaviour specific praise (Kern & Clemens, 2007; Oliver et al., 2011). Predictability lets teachers to focus more on appropriate behaviour and helps pupils to focus more on learning (Kern & Clemens, 2007; Sugai et al., 2000).

Teachers' classroom management practices have a positive effect to reduce the disruptive behaviour in classrooms (e.g., Närhi et al., 2017). According to Anderson et al. (1980), the investing for teaching and re-teaching the rules separated effective teachers from ineffective. Based on the meta-analysis by Oliver et al., (2011, pp. 5; 36), all pupils had less disruptive, inappropriate, and aggressive behaviours when compared with the pre-intervention results. They also noticed that pupils showed more appropriate behaviour when the classroom management was highly structured. According to Reinke et al. (2012, p. 47), a teacher experienced less effectiveness in classrooms where the amount of disruptive behaviour was higher. At the same time, they felt more effective when using praise in a classroom.

Fidelity and acceptability. Implementation science focus on how science is implemented to practice (Larson et al., 2018; Sanetti et al., 2020). In these studies, it is noted that implementation science is needed to reduce the inconsistency with science and practice. Because evidence-based interventions are based on the studies about effective manners, fidelity and good implementation are important features (Sanetti & Kratochwill, 2009). There are three aspects that need to be noticed when implementing an intervention: the level of intervention, intervention selection at that level and the complexity of intervention (Kern & Clemens, 2007, p. 73).

Sanetti et al. (2020) conceptualised treatment fidelity based on previous studies: it is multidimensional and includes intervention content, quantity (e.g., exposure in minutes), quality (e.g., student responsiveness to the intervention) and overall process (how intervention is delivered). Reports about treatment fidelity have been bounded mostly by adherence reports in positive behaviour support literature (Sanetti et al., 2012). A good intervention can be unsuccessful if it is not correctly implemented (Elliott, 1988). It is not obvious that effective interventions and instruction lead to appropriate behaviour (Levin & Nolan, 2007). Even though a teacher has the knowledge and the skills to use effective interventions, for example, strain and lack of efficacy can influence implementation (Reinke et al., 2012). It is suggested that there are organisational and individual level factors that influence the implement and the use of evidence-based practices (Domitrovich et al., 2015; Larson et al., 2018). According to Domitrovich et al. (2015, p. 1071), teacher level factor (e.g., age) had a significant relation with the implementation, but the school level factors did not.

In most studies, the fidelity of interventions is measured with self-evaluations (e.g., Närhi et al., 2017) or with intervention specific measurement (e.g., Sanetti et al., 2009). In a few studies, the intervention fidelity was measured with observers (Caldarella et al., 2019; Wills et al., 2021) or with comprehensive intervention fidelity guide (Gearing et al., 2011). Teachers needed to be informed and consulted for them to know how to assess the fidelity with self-evaluations (Sanetti & Kratochwill, 2009). There can be differences also in quality of fidelity

measures. Gearing et al. (2011) reviewed fidelity components and separated them to four components: 1) intervention design and protocols, 2) intervention training, 3) monitoring of intervention delivery, and 4) monitoring of intervention receipt. These can be separated to subcategories: 1) protocols, 2) execution, 3) maintenance, 4) feedback, and 5) threats.

Acceptability of the intervention is an important part of social validity. Acceptability means judgements that focus on treatment procedures and how appropriate, fair, and reasonable they are for the specific problem (e.g., Cowan & Sheridan, 2003; Eckert & Hintze, 2000, p. 125; Kazdin, 1981, p. 493). Intervention acceptability is subjective and it is based on who is evaluating the acceptability. It could be assessed by multiple people, like researchers, teachers, and clients themselves. Even if intervention is assessed to be effective it might not be acceptable to the specific problem (Kazdin, 1981; Witt et al., 1984). In the context of this thesis, acceptability is based on teachers' experiences. Usually, acceptability means procedures that are used in the intervention. This means assessing how suitable procedures are, how willing people use these procedures and how much they like these procedures (Kazdin, 1981). Witt et al. (1984, p. 98) examined five dimensions of intervention acceptability in the factor analysis: 1) general acceptability, 2) risk of the intervention, 3) teacher time used, 4) possible negative effect on other pupils, and 5) teacher skills needed. In the study by Närhi et al. (2017), intervention acceptability included evaluation about the experienced efficacy, benefit and necessity of the intervention and teachers' willingness to use the intervention in the future.

Acceptability of the intervention can be assessed with Intervention Rating Profile for Teachers (IRP-15) (Martens et al., 1985). It is based on wider version, Intervention Rating Profile, by Witt et al. (1984). Parts of IRP-15 questionnaire was also used in the study by Närhi et al. (2017). Also, other scales for acceptability are used, like Behavioural Intervention Rating Scale (BIRS). BIRS is made for rating both intervention effectiveness and acceptability and to assess the relation between them (Von Brock & Elliott, 1987).

It needs to be noticed that several factors can influence teachers' evaluations about acceptability, like school philosophy, available resources, teacher time and benefits to pupils (Elliott, 1988, p. 78). These factors are needed to identify if interventions could be more acceptable (Martens et al., 1985; Witt et al., 1984). In the study by Kazdin (1981, p. 498), he found out that for example, treatment conditions influenced the acceptability of the intervention. According to Elliott, 1988, p. 78), meaningful methodology behind the interventions had a relation with acceptability of the intervention. Also, positive interventions seem to be more acceptable (Elliott, 1988), less risky and more time-efficient than negative ones (Witt et al., 1984). Also, teachers have assessed any intervention to be more acceptable when it is applied to more severe problems (Martens et al., 1985). Experienced acceptability before the intervention seems to have a positive relation with effectiveness of the intervention (Elliott, 1988, p. 78). Regardless, it is important to notice that effectiveness of the intervention does not always mean that intervention is also acceptable by teachers (Witt et al., 1984). According to them, one reason for that is studies that are made in clinical conditions and cannot be implemented to the basic classroom: there can be a need for extra personnel or intervention is not available for teachers.

1.3 Strain and Interventions

Teachers' need for support has been noticed and it is important to increase the knowledge about the signs, determinants, and consequences of teacher stress and strain (Arens & Morin, 2016). Classroom management offers needed structure that can support teacher behaviour and make classroom practices more effective (Levin & Nolan, 2007; Oliver et al., 2011). According to Enlund et al., (2012), approximately 1/5 studied teachers reported about ethical dilemma that included disruptive or challenging behaviour, especially aggressive behaviour that was directed to teachers or pupils.

In this master's thesis, the term 'stress' is defined as an overall stress that teachers experience. The term 'strain' is defined as stress that is experienced

while teaching the class. Similar definition is also used in the studies by Närhi et al. (2014; 2017). Kinnunen (1989, p. 4) defined stress as a 'relationship between the individual and his/her environment'. Stress is always pertained with time and environment; it cannot be observed without them (Kinnunen, 1989; Lazarus, 1993). According to them, stress occurs when there is imbalance with the demands and individual's ability to meet them. It is important to notice that teacher stress varies according to the perspective that has been used in definition (psychological, behavioural, psychosomatic or health) (Kinnunen, 1989, p. 11). These attentions are important, regardless of whether stress or strain is discussed.

Kyriacou (2001, p. 28) defined strain to be a negative emotional experience, the feeling of threat to self-esteem or wellbeing, that occurs from work situation. According to Karasek (1979, pp. 289; 297), when strain occurs, a teacher cannot meet the demands caused by work, so demands get high and decision latitude low. This means that individual's potential to control work tasks is lower and the experience of strain is more usual.

Especially beginning teachers can be more vulnerable to strain and stress. Harmsen et al., (2018, p. 636) studied beginning teachers in Netherlands. According to them, tension, negative emotions and discontent have seemed to be stress responses. According to these results, high psychological task demands and negative pupil aspect were significantly and positively related to teacher perceived stress. Also in previous studies, teacher work experience, pupils' age and school level influenced teachers' wellbeing and levels of stress and strain (e.g., Mäkinen, 1982).

Boyle et al. (1995) made a model about the sources of teacher strain. These results showed that only the workload and misbehaviour were significant predictors to teacher strain. The same results were found later by Clunies-Ross et al. (2008, p. 702). Also, Van Dick and Wagner (2001, p. 248) got similar results: a workload and mobbing caused strain reactions whereas support reduces workload and mobbing. Instead, occupational commitment seems to have a strong negative impact on teacher strain (Jepson & Forrest, 2006, pp. 190–191). These findings show why teacher stress and strain need to be noticed. The right

balance between demands and decision latitude is individually important (Karasek, 1979).

Effects of strain. According to Kinnunen (1989, pp. 10; 28), teacher-pupil interaction is related to teachers' and pupils' wellbeing and daily classwork. Teacher poor wellbeing and problems are negatively related to pupils' intellectual, social, and emotional development. She also found that teachers' social relations had a significant relation to strain in the autumn semester while work hours were not significantly related to strain. Earlier, in the study by Mäkinen (1982, p. 124), most of the teachers described their interaction with pupils and colleagues to be good but some (approximately 30–40 %) thought that they did not get enough support from them. Klassen and Chiu (2010, p. 746) found similar results: teacher stress and strain had a relation to their self-efficacy and job satisfaction. It is also possible that teacher stress and strain will lead to more serious problems: effects can be longitudinal and for example a free weekend do not have an increasing effect on teacher wellbeing at the end of the year (Kinnunen, 1989, p. 27).

Like mentioned above, there is inconsistency in the implementation of interventions. The school setting in the different countries can affect the stressors and coping strategies that teacher has (Zurlo et al., 2007). At the same time, studies report that teaching the coping strategies to the teachers is not the only solution: reduce of disruptive behaviour with intervention is more important (Schonfeld, 2001). Cook et al. (2017, pp. 22–23) examined a wellbeing-promoting intervention (ACHIEVER Resilience Curriculum) that has the intention to reduce teachers' stress and strain and improve their evidence-based classroom management. Results showed that teachers in treatment group experienced less perceived stress and more self-efficacy and job satisfaction even though means of treatment and the control groups were similar in pre-studies. Participants in treatment group had more intentions to implement the intervention. They assessed the social validity of ACHIEVER to be good. These results support the thought about the need for support and consultation for teachers. The need for support has already been seen in Netherlands where beginning teachers

participate in the programs that help them to reduce the workload, support their effective behaviour, school enculturation and professional development (Harmsen et al., 2018).

1.4 Research Questions

Does teacher strain explain experienced changes of disruptive behaviour, the self-estimated fidelity, and the acceptability of the intervention?

1. Does teacher strain before the intervention explain the self-estimated fidelity when background information is controlled?
2. Does teacher strain before the intervention explain experienced changes of disruptive behaviour when background information and self-estimated fidelity are controlled?
3. Does teacher strain before the intervention explain the acceptability of the intervention when background information, self-estimated fidelity and experienced changes of disruptive behaviour are controlled?

2 RESEARCH METHODS

2.1 Research Context

In Finland, all children from years of 7 to 16 study in comprehensive school. Children study in the middle school from years of 12 to 16, at grades seven to nine. Middle schools have a subject teacher system. It means that every pupil groups are taught by multiple subject teachers. In Finland, the three-tiered support is used to help children with possible learning disabilities and other problems. All children have general support but, if necessary, intensified and special support is offered.

This intervention model (*Työrauha Kaikille*) is designed for class-wide use in general support and its focus is to reduce disruptive behaviour and prevent severe problems from occurring. The model was firstly developed in comprehensive school in Keuruu in Central Finland during the years from 2008 to 2010. The study is funded by the Finnish Ministry of Education and Culture. The intervention study was made with Finnish middle schools. Before the intervention, each school selected one to four participants that participated in training that prepared them for carrying out the consultation (Närhi et al., 2017). Within first two days, these participants familiarised with the intervention and consultation using the intervention manual (Kiiski et al., 2012). Third training day included possible questions and troubles that has emerged within first two weeks of the intervention.

In every school, the participants that took part in the consultation shared their knowledge to the subject teachers about intervention and implementation in the launch meeting before the intervention. The focus of the meeting was on information about the importance of clear behavioural expectations and positive feedback for pupils. In this meeting, teachers also discussed and decided the two most important disruptive behaviours that have an effect on classroom behavioural climate in participated classes (e.g., 'The pupils answer without

permission.'). These two disruptive behaviours were written to clear behavioural instructions positively (e.g., 'I wave my hand to get the turn.'). Also, weekly target level for pupils were set, usually about 70 to 80 percent. Pupils and providers were informed about the intervention and behavioural instructions were given to pupils for them to know what was expected of them.

The fulfilment of behavioural instructions was followed in every class per pupil. Every pupil got verbal feedback within classes and after every class, teacher marked plus or minus mark to both instructions. After every school week, a home room teacher made the overview and calculated the percent of every mark. If the percent an individual pupil got was lower than the before set percent, conversation with providers and school welfare group was held. If an individual pupil got lower percent regularly, he/she had a disciplinary educational discussion with special teacher or school social worker.

In this master's thesis, the focus was on the significance of teacher strain when focusing on the changes of disruptive behaviour and the intervention. Research was done by using answers by middle school teachers that taught these classes with problems in behaviour.

2.2 Research Participants

The participants were subject teachers (N = 208) from 24 Finnish middles schools. The teachers participated in the study by Närhi et al. (2017) and only part of this previous study was used in this master's thesis. Not every teacher that taught participated classes participated in the study. The participants were volunteers for the study, but every teacher participated in the intervention. Unfortunately, the participating percent of subject teachers is not known.

Participants were subject teachers from different subjects. All background information was gathered from 200 of the teachers, 8 teachers (3.8 %) did not answer to the background questions. Participated teachers were mostly females: 155 (74.5 %) of teachers were females and 45 (21.6 %) males. 124 teachers (59.6 %) have worked more than 10 years and 76 (36.5 %) have worked less than 10 years

as a teacher. The selected classes (n = 34) for the intervention were seventh grades (n = 19) and eight grades (n = 15). The number of pupils in taught group varied from 7 to 29, when the mean was 18.22 (SD = 18.00). Number of participated subject teachers that taught one class varied from 2 to 13. At seventh grades the variation was from 2 to 10 and mean 5.84. At eight grades the variation was from 3 to 13 and mean 6.47.

2.3 Data Collection

The data was gathered in 2013 and 2014 in Finnish middle schools. The Committee of Research Ethics of the University of Eastern Finland gave the ethical approval for the project.

Invited schools were contacted through principals and they discussed with the school staff about the participation. The teachers and principals of the schools chose the classes which participated in the intervention. In these classes, the classroom behavioural climate was poor based on assessment by multiple teachers. The participated schools were randomly divided into two groups: one having intervention within an autumn semester, the other within a spring semester. No more than two classes from one school participated, in order that teachers could focus on intervention with good fidelity. After the selection, the schools sent out the letter to inform providers about the intervention and the study and asked for permission to their child to participate in the study.

In this study, the possible effects of background variables were controlled: teacher gender, teacher work experience, grade level and number of pupils in class. The teacher **experienced disruptive behaviour** was studied with measurement by Närhi et al. (2014; 2017) which is based on Levin and Nolan's (2007) definition of discipline problems. This questionnaire was tested in the study by Närhi et al. (2014). Teachers answered questionnaire with 17 statements on a six-point Likert-scale: 1 ('very poorly') to 6 ('very well'). There were statements about all four aspects of classroom behavioural climate (learning climate, disruptive behaviour, safety and caring for environment), but only

disruptive behaviour was used in this thesis. Questionnaires were answered before and after the intervention. Five of the statements were related to disruptive behaviour (e.g., 'It is too noisy during lessons.'). Answers were scaled and their reliabilities were good: before α = .90 and after the intervention α = .88. According to various sources (Metsämuuronen, 2011; Nunnally & Bernstein, 1994), Cronbach's alpha (α) is sufficient when it is stronger than value .60. Value .80 is considered strong. New variable about **the experienced changes of disruptive behaviour** was made from before the intervention – and after the intervention -scales. Before the intervention scores were subtracted from after the intervention scores (after-before). Positive values indicated the growth of disruptive behaviour within intervention and negative values indicated the decrease of disruptive behaviour. On other words, negative values meant that intervention was experienced to be effective to reduce the disruptive behaviour.

In addition, **teacher strain before the intervention** was studied with this same measurement by Närhi et al. (2017). Teachers answered four questions about the strain experienced while teaching the class (e.g., 'I feel stressed about teaching the class.'). Also, these questions were already scaled to one variable. The reliability was good α = .88.

The sum variable, **the self-estimated fidelity**, was made from 6 variables (e.g., 'I motivated pupils to strive for goals during the classes.'). The answering scale were 6-point Likert-scale from 1 ('very poorly') to (6 'very well'). The reliability of the sum variable was good, α = .81. In this thesis, the treatment fidelity included only feedback and technical fidelity.

The sum variable, **the acceptability of the intervention**, was made from 8 variables (e.g., 'I'm willing to use the class-wide intervention in the future'; α = .93). The statements were based on and modified from the Intervention Rating Profile 15 (Martens et al., 1985). The answering scale was Likert-scale from 1 ('totally disgree') to 6 ('totally agree'). Both the self-estimated fidelity and acceptability of the intervention were measured only after the intervention.

2.4 Data Analysis

The data were analysed with the IBM SPSS Statistics 27. The data were analysed with hierarchical regression analysis. With this analysis it is possible to find out how the more than two variables explain the action (Metsämuuronen, 2011; Tabachnick & Fidell, 2014). In all research questions, used background variables were recoded into dummy variables (values from 0 to 1) to make the interpretation of the results easier. These recoded variables were teacher gender (0 = male, 1 = female), work experience (0 = less than 10 years, 1 = more than 10 years), number of pupils in class (0 = 7–18 pupils, 1 = 19–29) pupils) and grade level (0 = 7th grade, 1 = 8th grade).

Background assumptions for hierarchical regression analysis are that both dependent and independent variables are at least interval scale, except possible independent dummy-variables (Tabachnick & Fidell, 2014). Before analysis it also needs to be checked that there is a correlation between the dependent variables and the correlations of independent variables won't be too strong because of the possible multicollinearity. This correlation demand affects the variables that are used in this study. The background variables (teacher gender, work experience, grade level and number of pupils in class) were included in the analysis even if there were no statistically significant correlations. The multicollinearity is possible to find out from high correlations between independent variables but also the tolerance and VIF measures within the regression analysis needed to be checked (Tabachnick & Fidell, 2014). Descriptive statistics of all used variables are shown in the Table 1.

Table 1

Descriptive Statisctics About Used Variables

	N	*min*	*max*	*mean*	*SD*	*skewness*	*kurtosis*
teacher gender[1]	200	.00	1.00	.78	.42	-1.33	-.24
teacher work experience[2]	200	.00	1.00	.62	.49	-.50	-1.77
grade level[3]	208	.00	1.00	.47	.50	.14	-2.00
number of pupils in class[4]	208	.00	1.00	.47	.50	.14	-2.00
teacher strain, pre	208	1.00	5.50	2.44	1.01	.45	-.24
self-estimated fidelity	204	1.00	6.00	4.62	.81	-1.15	2.62
experienced disruptive behaviour, pre	208	1.20	6.00	3.61	1.08	.01	-.61
experienced disruptive behaviour, post	208	1.20	5.80	3.19	1.00	.33	-.65
changes of disruptive behaviour	208	-3.00	1.80	-.42	.85	-.39	.28
acceptability of the intervention	204	1.38	6.00	4.45	.84	-.91	1.47

NB: *N* = sample size, *SD* = standard deviation, [1] 0 = male, 1 = female, [2] 0 = less than 10 years, 1 = more than 10 years, [3] 0 = 7th grade, 1 = 8th grade, [4] 0 = 7–18, 1 = 19–29 pupils

With the first research question, the effect of strain before the intervention to teachers' self-estimated fidelity was studied. Hierarchical regression analysis was implemented in two steps. In the first step independent variables were only background variables mentioned above. Teacher strain before the intervention was implemented into the model in the second step. Dependent variable was self-estimated fidelity.

With the second research question the effect of strain before the intervention to the experienced changes of disruptive behaviour was studied. In the first step independent variables were background variables, the self-estimated fidelity and experienced disruptive behaviour before the intervention. Teacher strain before

the intervention was implemented into the model in the second step. Dependent variable was the experienced changes of disruptive behaviour.

With the third research question, the effect of strain before the intervention to the acceptability of the intervention was studied. In the first step independent variables were background variables, the self-estimated fidelity, and experienced changes of disruptive behaviour. The teacher strain before the intervention was implemented to the model in the second step.

2.5 Ethical Solutions

The Finnish National Board on Research Integrity (TENK, 2012), under the Finnish Ministry of Education and Culture, made a guideline to achieve responsible conduct of research. This master's thesis is a part of the research about class-wide intervention to reduce disruptive behaviour (Närhi et al., 2014; 2017). It got the ethical approvement from the Committee of Research Ethics of the University of Eastern Finland.

Used methods for data collecting and research are based on TENK (2012). All the participated schools, teachers and pupils were volunteers for the intervention study, and they could end the participation whenever they wanted. Because participated pupils were minors, their providers had a letter about the approval where they got information about the intervention and study. In this thesis, pupils' answers were not used.

According to TENK (2012), honesty, carefulness and accuracy are important in every phase of the research. In this study, only necessary background information was collected and used. The researcher made an agreement about the use of the data. While making this thesis, the data was stored in the password-protected files, and it will be deleted after publishing this master's thesis. This was also mentioned in the guidelines (TENK, 2012).

3 RESULTS

The research questions are based on the understanding of relations between used variables: Intervention fidelity is the precondition for the effectiveness of the intervention. Correspondingly, the intervention fidelity and experienced effectiveness have an effect on acceptability of the intervention. Previous studies have pointed out the relation between acceptability and effectiveness. Still, the relation is not obvious (Witt et al., 1984). Pearson correlations (Table 2) showed that teacher strain before the intervention had a correlation with the teacher experienced changes of disruptive behaviour ($r = -.22^*$): the more teacher experienced strain, the more effective the intervention was experienced to be. Also, the correlation between the teacher strain and experienced disruptive behaviour before the intervention was strong ($r = .66^*$). In all three research questions background information variables were independent variables.

Table 2

Pearson correlations between background variables, the experienced disruptive behaviour and teacher strain

	1	2	3	4	5	6	7	8	9	10
1. teacher gender[1]	1.00	.121	.022	.148*	.115	.031	.132	.042	-.119	.062
2. teacher work experience[2]	.121	1.00	.028	-.171*	-.079	-.032	-.147*	-.176*	-.019	.007
3. grade level[3]	.022	.028	1.00	.053	.044	-.059	.025	.003	-.028	.047
4. number of pupils in class[4]	.148*	-.171*	.053	1.00	.077	-.076	.074	.131	.060	-.145**
5. teacher strain, pre	.115	-.079	.044	.077	1.00	.079	.657**	.521**	-.219**	-.012
6. self-estimated fidelity	.031	-.032	-.059	-.076	.079	1.00	.094	.037	-.074	.350**
7. experienced disruptive behaviour, pre	.132	-.147*	.025	.074	.657**	.094	1.00	.664**	-.485**	.001
8. experienced disruptive behaviour, post	.042	-.176*	.003	.131	.521**	.037	.664**	1.00	.332**	-.159*
9. changes of disruptive behaviour	-.119	-.019	-.028	.060	-.219**	-.074	-.485**	.332**	1.00	-.188**
10. acceptability of the intervention	.062	.007	.047	-.145*	-.012	.350**	.001	-.159*	-.188**	1.00

NB: * $p < .05$, ** $p < .001$

[1] 0 = male, 1 = female, [2] 0 = less than 10 years, 1 = more than 10 years, [3] 0 = 7th grade, 1 = 8th grade, [4] 0 = 7–18 pupils 1 = 19–29 pupils

3.1 Teacher Strain and Self-estimated Fidelity

In the first research question, the effects of teacher strain before the intervention on teachers' self-estimated fidelity were studied. Results are shown in the Table 3.

Table 3

Hierarchical regression analysis about the teacher strain before the intervention and teachers' self-estimated fidelity when background variables are controlled (N = 208).

	self-estimated fidelity	
	step 1	step 2
independent variables	β	β
teacher gender[1]	.052	.043
teacher work experience[2]	-.052	-.045
grade level[3]	-.054	-.057
number of pupils in class[4]	-.090	-.094
teacher strain before the intervention	-	.080
R^2	.013	.020
ΔR^2	-	.006
Model fit	$F(4, 191) = .645$	$F(5, 190) = .757$

NB: β = standardised coefficients, [1] 0 = male, 1 = female, [2] 0 = less than 10 years, 1 = more than 10 years, [3] 0 = 7th grade, 1 = 8th grade, [4] 0 = 7–18, 1 = 19–29 pupils

Results (Table 3) showed that background variables and teacher strain before the intervention explained together only 2.0 % of the self-estimated fidelity, and the explanation was not statistically significant. At the second step implemented teacher strain before the intervention did not explain the self-estimated fidelity statistically significantly. Results showed that self-estimated fidelity is not dependent on teacher gender, work experienced, grade level, number of pupils

in class or teacher strain before the intervention. There were neither correlations between fidelity and those variables (Table 2).

3.2 Teacher Strain and the Changes of Disruptive Behaviour

In the second research question, the effects of teacher strain to the changes of disruptive behaviour were studied. Results are shown in the Table 4.

Table 4

Results of hierarchical regression analysis about the teacher strain before the intervention and the experienced changes of disruptive behaviour when background variables, the self-estimated fidelity and experienced disruptive behaviour before the intervention were controlled (N = 208).

	changes of disruptive behaviour	
	step 1	step 2
independent variables	β	β
teacher gender[1]	-.058	-.062
teacher work experience[2]	-.069	-.072
grade level[3]	-.019	-.024
number of pupils in class[4]	.092	.087
self-estimated fidelity	-.022	-.026
experienced disruptive behaviour before the intervention	**-.491****	**-.608****
teacher strain before the intervention	-	**.178***
R^2	**.254****	**.272***
ΔR^2	-	**.018***
Model fit	***F*(6, 189) = 10.743****	***F*(7, 188) = 10.049****

NB: * $p < .05$, ** $p < .001$, β = standardised coefficients, [1] 0 = male, 1 = female, [2] 0 = less than 10 years, 1 = more than 10 years, [3] 0 = 7th grade, 1 = 8th grade, [4] 0 = 7-18 pupils, 1 = 19–29 pupils

Results (Table 4) showed that background variables, the self-estimated fidelity, experienced disruptive behaviour before the intervention, and teacher strain before the intervention explained together 27.2 % of the changes of disruptive

behaviour. At the first step implemented teacher gender, work experience, grade level or number of pupils in class did not explain the changes of disruptive behaviour. The explanation for experienced disruptive behaviour before the intervention was clear. Disruptive behaviour before the intervention had a main effect and explained statistically significantly the changes of disruptive behaviour: the more teacher experienced disruptive behaviour before the intervention, the more teacher experienced disruptive behaviour decreased.

At the second step, teacher strain was implemented to the model. Teacher strain before the intervention increased the explanation only by 1.8 % but the increasing was statistically significant. The main effect of teacher strain before the intervention was positive and statistically significant. Compared to the results of Pearson correlation (Table 2), the explanation of teacher strain switched from negative to positive: The correlation was negative and statistically significant but main effect positive and statistically significant. The more teacher experienced disruptive behaviour before the intervention and the less he/she experienced strain, the more effective teacher experienced the intervention to be.

Because the connection between the teacher strain before the intervention and changes of disruptive behaviour changed the direction after disruptive behaviour before the intervention implemented, there appears to be a mediator effect (e.g., Baron & Kenny, 1986; Kenny, 2021). Disruptive behaviour before the intervention might be a suppression variable that change and decreased the explanation of the teacher strain before the intervention. Disruptive behaviour before the intervention explained the change of disruptive behaviour so strongly that it has an influence on the connection with two other variables (Baron & Kenny, 1986; Kenny, 2021). In other words, teacher strain had an effect on effectiveness of the intervention through the disruptive behaviour before the intervention. Mediator effect can also be a consequence of multicollinearity of the variables but the results of tolerance and VIF did not indicate the multicollinearity (Tabachnick & Fidell, 2014).

3.3 Teacher Strain and the Acceptability of the Intervention

In the third research question, the effects of teacher strain before the intervention and acceptability of the intervention were studied. Results are shown in the Table 5.

Table 5

Results of hierarchical regression analysis about the teacher strain before the intervention and acceptability of the intervention when background variables, the self-estimated fidelity and experienced changes of disruptive behaviour were controlled (N = 208).

	acceptability of the intervention	
	step 1	step 2
independent variables	β	β
teacher gender[1]	.053	.060
teacher work experience[2]	-.015	-.021
grade level[3]	.069	.071
number of pupils in class[4]	-.125	-.120
self-estimated fidelity	**.331****	**.336****
changes of disruptive behaviour	**-.148***	**-.164***
teacher strain before the intervention	-	-.076
R^2	**.169****	.174
ΔR^2	-	.005
Model fit	***F*(6, 189) = 6.385****	***F*(7, 188) = 5.654****

NB: * $p < .05$, ** $p < .001$, β = standardised coefficients, [1] 0 = male, 1 = female, [2] 0 = less than 10 years, 1 = more than 10 years, [3] 0 = 7th grade, 1 = 8th grade, [4] 0 = 18 or less, 1 = 19–29 pupils

Results (Table 5) showed that the teacher gender, work experience, grade level, number of pupils in class, self-estimated fidelity, changes of disruptive behaviour, and teacher strain before the intervention explained together 17.4 % of the acceptability of the intervention. The self-estimated fidelity had a positive main effect and the changes of disruptive behaviour a negative main effect on the acceptability of the intervention at the first step: the higher the self-estimated

fidelity was and the more effective the intervention was experienced to be, the more acceptable the intervention was estimated to be.

At the second step teacher strain before the intervention was implemented to the model. The explanation did not increase statistically significantly.

4 DISCUSSION

This master's thesis focused on teacher strain on teaching the class and the class-wide intervention for reducing disruptive behaviours (*Työrauha Kaikille*). Teacher strain before the intervention and its relation to the experienced changes of disruptive behaviour and intervention was examined. In this study, teacher strain meant strain occurring from teaching the class. The main research question was 'Does teacher strain explain the experienced changes of disruptive behaviour, self-estimated fidelity, and acceptability of the class-wide intervention?'.

Main results of this study showed that teacher strain before the intervention did not explain the self-estimated fidelity. Without disruptive behaviour before the intervention, the relation between teacher strain and the changes of disruptive behaviour was negative and statistically significant. When experienced disruptive behaviour before the intervention was noticed, the explanation of teacher strain switched to the opposite: the more teacher experienced strain before the intervention and the less teacher experienced disruptive behaviour, the less effective the intervention was experienced to be by the teacher. Teacher strain before the intervention did not explain the teacher experienced acceptability of the intervention.

First, teacher self-estimated fidelity was examined. Results showed that teacher strain before the intervention did not explain the self-estimated fidelity. Also, the background information did not explain the self-estimated fidelity. Previous fidelity research focused on interventions at more general level (e.g., Sanetti et al., 2020). There has been just a little research about fidelity with teacher strain. According to Domitrovich et al. (2015), teacher age had a relation with intervention implementation. Despite teacher's knowledge and skills, strain and lack of efficacy can have an effect on fidelity (Reinke et al., 2012, p. 40). Previous, more strained teachers had less effort for planning and participating (Mäkinen,

1982) and class management (Kinnunen, 1989, p. 10). These relations were not found in this thesis. One explanation for the result is that participated teachers were so conscientious that possible strain did not affect like expected. The ease and simplicity of the class-wide intervention (Närhi et al., 2017) can also have an influence on teacher self-estimated fidelity.

Second, teacher-experienced effectiveness of the intervention was examined. Results showed that self-estimated fidelity did not explain the changes of disruptive behaviour but experienced disruptive behaviour before the intervention did. The explanation was negatively and statistically significant: the more teacher experienced disruptive behaviour before the intervention, the more effective intervention was experienced to be. In other words, the more teacher experienced disruptive behaviour before the intervention, the more it decreased during the intervention. It is possible that participated teachers implemented intervention with such a good fidelity so that is why it doesn't influence effectiveness. Also, in previous studies interventions with evidence-based practices were examined to reduce disruptive behaviour (Närhi et al., 2017; Oliver et al., 2011; Simonsen et al., 2008): in general, the more there was disruptive behaviour, the more it was also possible to decrease it.

When teacher strain was added to the model, its explanation was positive: the less teacher experienced strain, the more effective teacher experienced the intervention to be. Together, the less teacher experienced disruptive behaviour before the intervention and the more teacher experienced strain, the less effective the intervention was experienced to be by the teacher. Correspondingly, the more teacher experienced disruptive behaviour before the intervention and the less teacher experienced strain before the intervention, the more effective intervention was experienced to be. The direction of teacher strain switched because of the possible mediator, a suppressor effect.

The results of this thesis do not align to the previous studies. There are multiple explanations for that. First, according to Pearson correlation, the more teacher experienced strain before the intervention, the more effective the intervention was experienced to be. According to Kinnunen (1989, p. 10), more

strained teachers had less effort for emotional support alongside intellectual and social development. Also, the support for more strained teachers were seemed to be important because it had a negative relation with pupil-teacher relationship (Kinnunen, 1989, p. 43; Kyriacou, 2001, pp. 32–33). Like mentioned above, the correlation of this thesis had an opposite relation: the more teacher experienced strain, the more his/her pupils benefitted from the class-wide intervention. The effect of strain was completely opposite in previous studies. Possible conclusion is that teachers experienced the intervention to offer also support to their strain in teaching. Still, the amount of experienced disruptive behaviour had a stronger influence on the effectiveness of the intervention than the teacher strain.

Second, in the study by Mäkinen (1982), work experience and school level were examined to have a relation to teacher wellbeing, stress and strain. In this study, there were not statistically significant correlations between teacher strain and any measured background variables. In this thesis the explanation of experienced disruptive behaviour was so strong that the explanation of teacher strain did not show as strong as expected. When considering the results of hierarchical regression analysis, it needs to be noticed that experienced disruptive behaviour was not examined in previous studies (e.g., Kinnunen, 1989; Mäkinen, 1982) like in this thesis. In those studies, disruptive behaviour was only examined as a predictor of teacher strain. That is why the results of these previous studies could only be compared with the correlations of this thesis.

Third, in this class-wide intervention, predictability, simplicity, and structure were important, like in evidence-based support (e.g., Epstein et al., 2008). In the data of this thesis, participated pupil groups had disruptive behaviours according to several teachers (Närhi et al., 2017), so the amount of disruptive behaviour before the intervention were high. According to Kern & Clemens (2007, pp. 65–67) and Oliver et al. (2011, p. 36), evidence-based practices predicted pupils' appropriate behaviour and focus on learning. Proactive classroom management also supports teachers' behaviour (Oliver et al., 2011). This result could explain why teacher strain was first and foremost related to

more effective intervention. According to Kinnunen (1989) and Levin and Nolan (2007), teachers should change their behaviour first that pupils can change their own behaviour.

Last, the acceptability of the intervention was examined. The self-estimated fidelity and experienced changes of disruptive behaviour explained the acceptability of the intervention clearly: the higher self-estimated fidelity was, and the more effective teacher experienced the intervention to be, the more acceptable the intervention was experienced to be by the teacher. Teacher strain did not explain the acceptability of the intervention. Self-estimated fidelity and acceptability of the intervention had a clear and strong relation together. The results of this study are in line with previous studies: good intervention with meaningful methodology and positively stated commands increased the acceptability of the intervention (Elliott, 1988; Witt et al., 1984). Also, Martens et al. (1985) examined that any used intervention was experienced to be acceptable when problems were more severe. This clarified the fact that experienced effectiveness of the intervention explained the acceptability of the intervention: when teachers experienced disruptive behaviour decreased it increased teachers' thought that intervention is acceptable in practice.

Limitations. There were also limitations in this study. Participated classes were selected to the intervention because they had a poor classroom behavioural climate, based on several teachers' evaluations (Närhi et al., 2017). It is important to discuss what was the reason for subject teachers to not to participate in the study of class-wide intervention. In the data of this thesis, not all of the subject teachers that taught classes participated in the study. Also, the percent of participating were not clearly known. It is possible that extreme ends – teachers that are the most and least strained – did not participate. Reason could be that 'I do not need help, because I can manage the disruptive behaviour' or 'I cannot cope anything new'. It is possible that fidelity and acceptability results distorted because of that: teachers that did participate could experience the intervention to be more acceptable because they wanted to participate in the first place. For

example, they could experience that there was less disruptive behaviour, or they were less strained.

It was clear that there was no possibility to generalise the results: other interventions about reducing disruptive behaviours have been made with different action. This class-wide intervention is designed to be simple and easy to apply but that is not true with all interventions for reducing disruptive behaviours. In previous studies, the disruptive behaviour and teacher strain were not examined like in this thesis; both as an independent variable together. Also, different types of measures were used in the studies. Use of self-reports were questioned in some studies. For example, Kinnunen (1989) pointed out the problems in stress research and self-reports. On the other hand, teacher self-report measures were also examined to be valid when measuring teachers' own behaviour (e.g., Clunies-Ross et al., 2008).

In the original study by Närhi et al. (2017) they measured self-estimated fidelity in four different parts: 1) start-up, 2) familiarisation, 3) feedback and 4) technical fidelity. Also, consultants and pupils evaluated the fidelity of the intervention: consultant evaluated how checklist was fulfilled and pupils about teachers' behaviour. In this master's thesis only one fidelity scale was used: teachers' self-estimated fidelity measures were put into one category that included only feedback and technical fidelity. Also, intervention fidelity was based on teachers' self-evaluations and no other measures, like observation (e.g., Caldarella et al., 2019), were used. These choices limited the intervention fidelity: the multidimensional fidelity could not be examined, and the measures could be subjective because only the teachers' self-estimations were used.

The mediator effect was found in this master's thesis. It dealt only in general, and the mediator model was not reported. With the data of this master's thesis, it is not possible to firmly point out the direction of the relation between strain and changes of disruptive behaviour. The relation between these variables should be directed from teacher strain to experienced disruptive behaviour in order to take the mediator effect into account. In earlier studies (e.g., Enlund,

2012; Harmsen, 2018; Kinnunen, 1989; Naukkarinen, 1999), it has been found that teacher strain is both a cause and an effect of disruptive behaviour.

Further research. In the future, it will be important to examine intervention fidelity with multidimensional definition (e.g., Sanetti et al., 2020). This means that all the different aspects of fidelity are measured and used in the analysis. For example, information about start-up and teacher familiarisation fidelity are also important. Those aspects of fidelity were studied in the original study by Närhi et al. (2017). Also, the variety of fidelity measures is important: this could mean observation (Caldarella et al., 2019) among self-evaluations. Observation can bring more versatile information about fidelity because teachers' own evaluation can, of course, be subjective.

It would also be interesting to examine the possible mediator effect more. With the results of this thesis, it could only be supposed that teacher strain explained the effectiveness of the intervention through the disruptive behaviour before the intervention. With the mediator model it is possible to find out how much the mediator effect explains about the effectiveness of the intervention and is the explanation statistically significant. In the future, it is important to measure teacher strain and the disruptive behaviour before the intervention at different points of study period: when teacher strain is measured earlier than disruptive behaviour, the mediator effect could be measured. This would also clarify how teachers should be supported with strain and disruptive behaviour.

In this thesis, clear group comparisons between more and less strained teachers or pupil groups with more and less disruptive behaviour were not made. In future, possible differences between these groups could be important to study. According to the results of this thesis, it is probable that there are differences between these groups: 1) more strained teachers with more disruptive behaviour in classrooms and 2) more strained teachers with less disruptive behaviour in classrooms. Possible interaction term could also explain the differences between the most and the least strained teachers and between the classrooms with the most and the least disruptive behaviour.

The results of this thesis alongside the results of previous studies raised an important question about how (strained) teachers should be supported: teach the coping strategies or classroom management for them. According to the results of this thesis, teacher classroom management is more important. Previous studies support that: effective classroom management has a decreasing effect on disruptive behaviour (Wang et al., 2020) and teacher strain had a negative relation to teacher job satisfaction and self-efficacy in classroom management and instructional strategies (Klassen & Chiu, 2010). Also, the study by Oliver et al. (2011) aligns with the conclusion of this thesis: teacher classroom management supported teachers' behaviour which is important when wanting to reduce disruptive behaviour. In teacher's role is important that he/she reacts right to the disruptive behaviour and discipline problems in classrooms (Holopainen et al., 2009; Levin & Nolan, 2007). According to Schonfeld (2001), reduce of disruptive behaviour is more important than teaching coping strategies for teachers. Good classroom climate and teacher-pupil interaction have also a decreasing effect on teacher strain (Kinnunen, 1989; Kyriacou, 2001). Kinnunen (1989, p. 43) noted that primary aim is to improve teachers' working conditions. According to these results, action that reduced disruptive behaviour is the main habit when there are disruptive behaviour problems in classrooms. More studies about the influences of classroom management and interventions on teacher strain are needed (e.g., Kinnunen, 1989; Oliver et al., 2011). This could strengthen the idea that focusing on classroom management and reduce of disruptive behaviour is more important than coping strategies for strain. In the long run, teacher could experience to be more self-confident with the behavioural management and his/her occupation and that leads to decreasing of teacher strain (Jepson & Forrest, 2006).

In practice, teachers should focus especially on disruptive behaviour and reduction of it. When teachers make clear expectations and give positive feedback systematically, disruptive behaviour will decrease in classrooms (e.g., Närhi et al., 2017; Wang et al., 2020). Appropriate behaviour leads to better teacher-pupil interaction and that has an effect on teacher wellbeing and strain

(Kyriacou, 2001). At school level, support from principals is important (Kyriacou, 2001; Jepson & Forrest, 2006) for the whole school and its teachers to have a knowledge and skills to apply effective behavioural management to the classrooms.

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