Children developing self-regulation skills in a Kids’ Skills intervention programme in Finnish Early Childhood Education and Care

Merja Hautakangas, Kristiina Kumpulainen & Lotta Uusitalo

To cite this article: Merja Hautakangas, Kristiina Kumpulainen & Lotta Uusitalo (2021): Children developing self-regulation skills in a Kids’ Skills intervention programme in Finnish Early Childhood Education and Care, Early Child Development and Care, DOI: 10.1080/03004430.2021.1918125

To link to this article: https://doi.org/10.1080/03004430.2021.1918125
ABSTRACT

Self-regulation skills are fundamental for a child’s development and learning. Yet, problems in self-regulation are common and several programmes with varying results have been created to overcome them. In this article, we have reported on a controlled ten-week intervention study. Twenty-eight children aged 4–7 years and with poor self-regulation skills participated in their Early Childhood Education and Care (ECEC) centres. The intervention programme, entitled Kids’ Skills, is based on a strength-based and solution-focused perspective. Compared with the 15-child control group, the intervention group showed significant progress. The Kids’ Skills intervention made visible the teacher’s strong engagement to develop children’s self-regulation skills and the positive interaction, such as how the teacher supports the child in challenging situations. The Kids’ Skills’ strength-based pedagogy, emphasizing that rather than the child being a problem, the child and the teacher work together to solve the child’s problem, increases the child’s involvement and their development of self-regulation skills.

Introduction

Self-regulation is a widely researched area of children’s development (e.g. Bronson, 2000) and regarded as an essential element in early years pedagogy. Through self-regulation, one can control the direction of one’s attention, thoughts, feelings and actions (Blair & Diamond, 2008; Blair & Raver, 2014; Tominey & McClelland, 2011). Hence, self-regulation comprises a set of skills that are foundational for learning. Self-regulation skills involve executive functioning, that is working memory, behavioural inhibition and task-switching. As written by Matthews and his colleagues (2009, p. 690), self-regulation is a proximal factor that consistently predicts educational experiences and outcomes in early childhood and ultimately leads to differences in achievement. Several studies suggest that learning self-regulation skills predicts academic success (e.g. McClelland et al., 2007; Valiente, Lemery-Chalfant, & Castro, 2007). In particular, self-regulation skills and perseverance seem to be powerful predictors of academic success (Duckworth & Seligman, 2005). Academic successes nourish self-esteem and self-efficacy beliefs (Bandura, 2010; Baumeister, Campbell, Krueger, & Vohs, 2003). Self-regulation and self-esteem are related and intertwined in many ways. For example, Crocker and her colleagues (2006, p. 1751) argue that concerns with...
self-esteem, desiring to maintain, enhance, and protect self-esteem, often derail successful self-regulation.

When the child learns self-regulation skills successes in a multitude of actions and tasks are facilitated. This promotes the child's self-esteem and self-efficacy beliefs (e.g. Schunk & Zimmerman, 2007; see also Kumpulainen, Mikkola, Rajala, Hilppö, & Lipponen, 2014; Uusitalo-Malmivaara & Vuorinen, 2016). On the other hand, difficulties in self-regulation are not only related to learning or cognitive challenges but also tap several other aspects in children's well-being including aggression control and social relationships (McLaughlin, 2008; McRae et al., 2012). Self-regulation processes are facilitated by positive emotions, and, respectively, negative emotions may hamper self-regulation (Zelazo, Blair, & Willoughby, 2016). In sum, self-regulation is one of the critical predictors of young children's positive development (McClelland & Cameron, 2011).

Numerous studies show that self-regulation is a malleable and a teachable set of skills (Blair & Raver, 2014; Blair, McKinnon, & Daneri, 2018; Diamond & Lee, 2011; Hernández et al., 2018; Savina, 2021; Schmitt, McClelland, Tominey, & Acoc, 2015; Shiu, Wang, & Chen, 2020; Tominey & McClelland, 2011). It has been found that if children participate in self-regulation interventions in Early Childhood Education (ECE), their behaviour can improve with positive implications for their later academic achievements (Blair & Raver, 2014; McClelland, Tominey, Schmitt, & Duncan, 2017; Schmitt et al., 2015). In particular, previous research shows that children growing in unfavourable and risky conditions benefit from high-quality ECE, which can help overcome the challenges and restore equality of educational opportunities by providing help in self-regulating skills, especially (Blair & Raver, 2014; Nores & Barnett, 2010).

Self-regulation develops from external to internal with the support of the environment, through the process of internalization (Barkley, 2012). Therefore, a teacher's support is a crucial element in nourishing growing self-regulation skills (Pöysä, 2020; Rimm-Kaufman, Nathanson, Brock, Curby, & Grimm, 2009). However, how Finnish teachers implement the pedagogical contents of early childhood education and care varies a lot (Ranta, 2020). The success of self-regulation depends on the goals, rules and strategies that guide task performance and behaviour (Barkley, 2012). In order to keep these active in working memory, it is important that the teacher together with the child reflects on the strategies and gives the child regular feedback that can lead to better self-regulation (Espinet, Anderson, & Zelazo, 2013).

A number of interventions targeted at enhancing children's self-regulation development have been developed over the years. According to Diamond and Lee (2011), the common features of the programmes are the planning of self-regulation activities, the significant role of play, and the support of children's autonomy and agency. All these programmes have required intensive teacher training. However, there are numerous studies that did not show positive effects or are hard to run (e.g. Moy & Hazen, 2018). For example, programmes may require additional resources, such as a mental health consultant or extensive training of teachers to use the programme, which can make it difficult to implement the programme (Raver et al., 2011; Ursache, Blair, & Raver, 2012). In addition, it has been shown that programmes do not necessarily benefit younger children, but activities show benefits for children over the age of seven (Diamond & Lee, 2011). Upshur, Heyman, and Wenz-Gross (2017) note that programmes instructional specificity should be closely monitored in order to maintain cost-efficiency. According to Tominey and McClelland (2011) programmes may also be just too simple or on the other hand, too diverse including multiple components causing difficulties to determine which components led to the wanted results (Ursache et al., 2012) and what impact was caused by teacher's contributions (Lillard, 2017).

Further research is needed to develop reliable, valid, and sensitive programmes of self-regulation that can be used in everyday interactions, where children's self-regulation skills are needed, used, and supported (Kurki, Järvenoja, Järvelä, & Mykkänen, 2017; McClelland & Cameron, 2011). In the present study, we examined the impact of a targeted self-regulation intervention using the Kids' Skills programme with ECE teachers and guardians. Even though Kids’ Skills is a frequently used Finnish programme studies of its use have been lacking in Finland. The Kids’ Skills is an
internationally used programme (Perband & Rogner, 2019) and its research is needed in different cultural and educational contexts.

**Kids’ Skills**

Kids’ Skills is a programme developed by Ben Furman, a Finnish psychiatrist (Furman, 2003). The core idea of the programme is that the children actually do not have problems but rather skills they have not yet learned. The leading principle of the Kids’ Skills programme is strength-based thinking: the programme holds that children can practice their skills and strengthen them with positive feedback from adults. Furman (2003) describes Kids’ Skills as an easy-to-use and versatile programme suitable for the treatment of childhood-related development delay and more serious psychological and neurological disorders. (Furman, 2003.) The aim of the Kids’ Skills programme is to increase the self-regulation of children through participation, which supports child’s learning of responsibility as well learning to identify their own strengths (Zimmerman, 1999).

Developing the Kids’ Skills programme was inspired by psychiatrist Milton H. Erickson and the brief therapy method, which looks at the problem from a learning perspective (Furman, 2016). The brief therapy focuses on children and their symptoms that children can learn to control (Haley, 1987). Secondly, Kids’ Skills is influenced by narrative therapy, where the problem is outsourced through play (White, 1984). Thirdly, Kids’ Skills derives from solution-focused therapy, which focuses on children’s goals and achieving them instead of problems (Insoo & Steiner, 2003). A solution-focused perspective relies on the theory of positive psychology (Lipponen, 2014). Positive psychology provides an educational discussion with a well-being and strength-based perspective that can affect learning and educational processes (Huebner, Gilman, Reschly, & Hall, 2009; see also Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). As stated by Leskisenoja (2016, p. 11), positive psychology has introduced the idea of positive education to provide a positive and strength-based approach to schoolwork. In particular, positive psychology is interested in building the strengths in character (Peterson & Seligman, 2004). Character strengths are positive, trait-like capacities for thinking, feeling, and behaving in ways that benefit oneself and others, a family of positive characteristics each of which exists in degrees (Park & Peterson, 2009). Self-regulation is one of the most important character strengths. Like all character strengths, it is subject to learning (Park & Peterson, 2009; Uusitalo-Malmivaa, 2014). This is at the heart of the Kids’ Skills programme as well.

Implicating the principles of the Kids’ Skills do not require any specific teaching or learning materials. Kids’ Skills is a flexible programme that can be applied to the needs of both an individual child (e.g. self-regulation skill) and a whole group of children (e.g. peer interaction skills) as part of early childhood education (Furman, 2016). The programme relies on the interaction between the adult and the child: adult anticipation and timely support are emphasized. The child trains to acquire the skill desired and the adult maintains, monitors, supports, and gives positive feedback (Furman, 2016). Kids’ Skills allows teachers and guardians to support the development of the child’s skills both in ECEC and at home. This goal-oriented co-operation between guardians and teachers can be seen as one of the strengths of the programme, as previous studies have shown on the development of a child’s self-regulation skills (Boekaerts, 2011).

According to Blair (2002), children with poor self-regulation skills usually have problems with poor working memory, cognitive flexibility, and inhibition control. Thus, the teacher will help the child to practice these aspects in Kids’ Skills. The teacher acts as a reminder to the child, helping with the choice of strategy, attention, and direction. Working memory consists of hearing and visual aspects (Baddeley, 2012), so it is important to use visual methods to support child’s learning. To do so, cognitive flexibility and inhibition control are to be recognized. Cognitive flexibility is the ability to think and act flexibly, to change perspective, and to adapt flexibly to new demands, rules or choices, to focus attention, and to activate working memory. Inhibition control is the ability to control behaviour, attention, and thoughts despite various internal and external stimuli.
For example, it enables the child to plan their own activities, solve a problem, and achieve a goal without impulsive behaviour or responding to every stimulus irrelevant to the task. (Diamond, 2013.)

The Kids’ Skills programme consists of fifteen steps, starting from the skill-training phase (steps 1–2). The steps in the Kids’ Skills programmes are presented in Table 1. In practice, the first step is that if the child behaves with extreme withdrawal or aggressiveness, the teacher proposes to the child’s guardians that the child could attend the Kid’s Skills programme to be trained to develop self-regulation skills. At step 2 the child’s problem is first translated into a skill. Next, the teacher and child agree on a 15-step skill exercise: the child and a teacher create a shared understanding and agreement on how the child will practise self-regulation and how he/she will be reminded if and when they forget how to react or behave.

According to Furman (2003), the second phase, motivation (steps 3–10), is a phase in which the teacher motivates the child to practise the self-regulation skills. In practice, at step 3, the desired behaviour is described for the child. The teacher helps and supports the child to see what the benefits from learning the new skill are. Then (step 4) the child creates a creative name for the skill, e.g. fireman-skill and chooses a strength creature (step 5), such as a picture of a hero, in their skill bag. At the sixth step, the child is guided to ask for supporters such as friends and teachers to help him/her to learn the skill. Next, as step 7, the teacher is to confirm the child’s belief of the capability to learn the skills by emphasising the child’s strengths and positive aspects of a child for an example. The child and teacher are also planning how learning the skills are to be celebrated (step 8). During the motivation phase, it is also important that the child explains and demonstrates how they plan to work in practice to control the skill (step 9). The tenth step is to inform people close to the child about the entity of the practice of skill.

The third phase of the programme is practising the skill (steps 11–13), which is an important and often long-lasting stage, in which the child is practising the skill under training. In general, during the skill training (step 11) the teacher follows shared and agreed practices, reminding the child of the desired behaviour, acting as a working memory and helping them with pictures or words to regulate feelings and behaviour. The teacher monitors the child and is sensitive to their need for support. Even the child’s small successes are noticed, and the teacher encourages the child to try to trust themself and succeed. As the teacher has compromised with the child at an earlier motivation phase about the ways to remind them if they forget the skill, these practices are to be used in this phase of the programme (step 12). Successful practising of a child’s skill is also rewarded in a previously agreed manner (step 13). The child is to thank all who helped them learn the skills too.

Strengthening the skill learning takes phase in the final phase (steps 14–15). As step 14, the child teaches the skill they have learned to other children in order to strengthen their learning of the skill.

### Table 1. Kids’ Skills programme.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Step</th>
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<tr>
<td>Skill training</td>
<td>1. the problems are translated into skills</td>
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<td></td>
<td>2. agreeing on skills</td>
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<tr>
<td>Motivation</td>
<td>3. the benefits of the skills are mapped</td>
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<td></td>
<td>4. the skill is named</td>
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<td></td>
<td>5. the child chooses a strength creature</td>
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<td></td>
<td>6. are invited for supporters</td>
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<td></td>
<td>7. creating a child’s faith in success</td>
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<td></td>
<td>8. planned for celebration</td>
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<td></td>
<td>9. skill is displayed</td>
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<td></td>
<td>10. the skill will be announced</td>
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<tr>
<td>Practice skills</td>
<td>11. skills are practised</td>
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<tr>
<td></td>
<td>12. how to remember the skill</td>
</tr>
<tr>
<td></td>
<td>13. celebrate learning</td>
</tr>
<tr>
<td>Strengthening of skill learning</td>
<td>14. a child teaches the skill another child</td>
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<tr>
<td></td>
<td>15. agree on the following skill</td>
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</table>
It must be noted that if a child’s self-regulation problems are serious, it is worth splitting it into small parts of the skill. So, the child learning the skill will improve not only in the skill itself, but also their self-esteem will increase with positive feedback and success at the same time. Thus, as the last step (15) the next skill to be learned can be agreed with the child at this phase.

According to previous qualitative studies (Becker, 2014; Bentner, 2014) German teachers described the Kids’ Skills. These studies showed that the programme was identified as having a positive impact on the development of children’s self-regulation skills by the educational professionals. In addition, the study by Perband and Rogner (2019) showed that during the sixth-week of the Kids’ Skills intervention in a German day-care centre, 6 of the 10 children acquired the agreed skills. Also, positive changes regarding the children’s self-efficacy and self-esteem as well as an improved relationship between teachers and children were experienced.

**The present study**

The first aim of this mixed-methods study (see Creswell & Plano Clark, 2007) was to examine how children’s self-regulation skills developed in the Kids’ Skills intervention that was run in the Finnish Early Childhood Education and Care (ECEC) setting. Although research about the programme in Finland is scarce, our hypothesis was that the programme is an effective method for developing children’s self-regulation skills, as previous studies in other countries have shown (e.g. Barnett, 2011; Raver et al., 2011; Shiu et al., 2020).

The research questions are:

1. What impact does the Kids’ Skills intervention have on children’s self-regulation skills?
2. How do teachers promote children’s self-regulation skills through the intervention?

**Methods**

**Context of the study**

Two ECEC centres in a medium-sized Finnish city were selected for the study. The Kids’ Skills intervention was conducted in four child groups at two ECEC centres. The intervention was carried out by the children’s own teachers, who had been trained to use the programme. Informed consent for the study was obtained from the city governance, ECEC centre leaders, and the children and their guardians and teachers participating in the study. All participants in the study volunteered to participate and they could withdraw from it at any time. The ethical setting for this research followed recommendations from the Finnish advisory board on research integrity (FNBRI, 2019).

**Participants**

The participants of the intervention were 28 children (aged 4–7, mean age 5 years 11 months, 15 girls). The matched control group comprised 15 children (aged 4–7, mean age 5 years 5 months, 6 girls). The ECEC centres, residential areas and the support needs of the children were roughly the same in both groups. All children in the current study had poor regulation skills. They needed their teachers’ support to control their emotions and behaviour in transition situations, with peers, and in learning assignments. The teachers picked up these children from their groups. These teachers’ assessments were based on pedagogical expertise and the Finnish three-tiered support system defined in the National Core Curriculum for Pre-primary Education (NAE, 2014). All children in the intervention and control group received general, intensified, or special support for self-regulation skills.

The control group was not familiar with what is meant by Kids’ Skills programme. Thirteen formally competent early childhood teachers (seven educators with a bachelor’s degree, six vocational
trained nurses) contributed to the study. The aims of the study were known to teachers in both groups.

**Study setting**

A classic experimental design was applied with pre–post measurements for the study group, the control group and the teachers and the guardians. First, 13 teachers were trained in practising the Kids’ Skills programme in August 2017. Then, the researcher and the special education teacher trained study group teachers in using the Kids’ Skills intervention. The special education teacher and researcher had been using the Kids’ Skills programme for years. The teachers received precise instructions, but they had the autonomy to apply the programme to different children and in different situations. All teachers were advised on the use of the Kids’ Skills programme.

Using the programme in the study group lasted for ten weeks from September to November 2017. At that time, the researcher observed all groups of children for four or five days. The 10 weeks of practice was followed by post-tests in late November to December. The delayed final measurement was performed in April 2018. Table 2 illustrates the procedure of this study.

**Scales**

**Direct measures of behavioural self-regulation**

To answer our first research question, we examined the development of children’s behavioural self-regulation with the Head-Toes-Knees-Shoulders Task (HTKS) (Cameron Ponitz et al., 2008). The HTKS is a measure of behavioural self-regulation that requires working memory, cognitive flexibility, and inhibitory control (Cameron Ponitz, McClelland, Matthews, & Morrison, 2009; McClelland et al., 2014; McClelland & Cameron, 2011). During the first phase of the task, children were asked to respond to a command (e.g. ‘Touch your toes’). In the second step, children should do the opposite of what a research asks them to do (e.g. ‘Touch your knees’ means touch your head). In subsequent phases, additional commands were added, and rules were changed, increasing the cognitive complexity of the task. The measure consists of 30 items of increasing difficulty (scores range from 0 to 60). Children were given a score of 0 for an incorrect response, 1 for a self-corrected response, and 2 for a correct response. A great number of studies suggest that the HTKS is a valid and reliable measure of self-regulation for children in several countries (Cameron Ponitz et al., 2008; Gestsdottir et al., 2014; McClelland et al., 2007; McClelland et al., 2014; Schmitt et al., 2015; von Suchodoletz et al., 2013; Wanless, McClelland, Acock, Chen, & Chen, 2011).

**Teacher ratings of behavioural self-regulation**

For the first research question, we also used evaluations from teachers and guardians from both the intervention and the control group. The teachers and the guardians responded to the Children Behavior Rating Scale (CBRS) (Bronson, Tivnan, & Seppanen, 1995). One child could have several estimates from the adults, the mean of which was used during the analysis phase.

**Table 2. Procedure timeline**

<table>
<thead>
<tr>
<th>Year</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
<td>August</td>
<td></td>
</tr>
<tr>
<td>What</td>
<td>HTKS1, CBRS1</td>
<td>Kids’ Skills education for intervention group</td>
</tr>
</tbody>
</table>

Notes: HTKS: Head–Toes–Knees–Shoulders test (Cameron Ponitz et al., 2008); CBRS: children behavior rating scale (Bronson et al., 1995); AED: adult engagement scale (Laevers, 1994).
The CBRS comprises 17 items on a 5-point Likert scale (1 indicating children never displayed certain behaviours, five indicating that children always displayed certain behaviours) and were used to determine children’s self-regulation (Cameron Ponitz et al., 2008; Wanless et al., 2011). The guardians and teachers rate questions on a scale of one to five: ‘The child never/rarely/sometimes/frequently or usually/always exhibits the behaviour described by the item.’ Example items include: ‘Attempts new challenging tasks,’ and ‘Observes rules and follows directions without requiring repeated reminders’. Previous research has found that the CBRS is significantly related to children’s self-regulation skills and academic achievement (Gestsdottir et al., 2014; McClelland et al., 2007; Schmitt et al., 2015; von Suchodoletz et al., 2013; Wanless et al., 2011).

The first ten questions in the CBRS (e.g. ‘Completes tasks successfully’, ‘Concentrates when working’, ‘Try new challenging tasks’) prove Self-regulation and the seven last questions prove (self-regulating related) Social skills (e.g. ‘Willing to share’, ‘Cooperates with playmates’, ‘Indicates verbal or physical hostility towards other children’). The sum variable’s reliability (Cronbach’s alpha) was high at all measurements (intervention >.90, control >.80).

**Adult Engagement Scale**

To respond the second research question, we examined teacher activity in the videos using the Adult Engagement Scale (AES) (Laevers, 1994). This instrument is based on the notion that the style of interaction between the teacher and the child is a critical factor in the effectiveness of the learning experience and the child’s well-being. The instrument is divided into three characteristics that describe the teacher’s activity: sensitivity, stimulation and autonomy. The teacher demonstrates sensitivity by understanding and responding to the child’s basic needs and different emotional states with respect for the child. Stimulation means that the teacher recognizes the child’s level of cognitive development and provides the child with activities that are appropriate for their level, challenging enough and motivating. Autonomy is the degree of freedom that the teacher gives the child to experiment, make judgments, choose activities, and express ideas. The measure ranges from 1 to 5 (1 = completely uncommitted and 5 = fully engaged) (Laevers, 2003; Pascal & Bertam, 1999.) The examiner watches the video episodes and ranks them in the three categories (sensitivity, stimulation and autonomy) from 1 to 5.

**Kids’ Skills intervention in practice**

The Kids’ Skills programme was used in a variety of everyday situations, which were challenging for children with poor self-regulation skills. Situations present in this study were such as transitions, waiting for their own turn, playing with peers, teacher-directed teaching situations, eating, dressing, coming to the ECEC centre and going home. In all these acknowledged situations, the procedure followed the phases of the programme. Firstly, the teachers and guardians agreed that the child would start the skills training with their support. Secondly, the teacher and the child agreed on the skills training. In this intervention, to help a child’s motivation to commit to the training, based on the principles of the Kids’ Skills programme, comic strip conversation was used. In comic strip conversations the teacher first draws a challenging situation, for example, a dispute between a child and its consequences, after which the teacher draws the desired behaviour to help the child regulate their feelings and behaviour (see Gray, 1994). Thirdly, the development of the child’s skills was supported by positive and encouraging feedback in everyday situations when a child needed support. The researcher and the special education teacher provided guidance for the teachers during the intervention when needed. An example of the practice is Lisa’s skill training:

Lisa is aggressive, and she often gets angry, and she hits a teacher or her peers or breaks things. Lisa is nasty to her peers and nobody wants to play with her. A teacher and Lisa agree that she will practise ‘princess skills’. Lisa chose what skill she wants to practise. She chose her strength character to be a princess because they are friendly and have friends. The teacher motivated Lisa by drawing a
comic strip conversation showing her the consequences of being angry or bullying or hitting her friends. A comic strip as a visual element helps Lisa to remember. The goal of the skill training was for Lisa to regulate her emotions and behaviour. When Lisa switched from one activity to another flexibly, or controlled impulses and external stimuli, or played smoothly with her friends, the teacher thanked her and gave her a sticker for her skills passport. The teacher gave positive feedback on even small successes, for example, when she succeeded in difficult tasks without becoming frustrated or quit playing and moved on to another activity controlling her anger or followed the rules and guidelines. After adding ten stickers to Lisa’s skill passport, Lisa was rewarded with a little trip of her choice with her mother.

**Data collection**

The first author tested all children in the study group and the control group. Before testing, she familiarised herself with the children by working with them for a couple of hours. The children were individually tested in a quiet room in their own ECEC centre. The first author asked the children for consent to the test and the children had the right to refuse it.

The questionnaire containing the CBRS (and the background variables of the children’s gender and age and the name of the child’s ECEC centre) was delivered to participating children’s teachers and guardians as an electronic online questionnaire. Teachers responded to the questionnaire during their working hours and guardians from their own devices.

Teachers’ engagement to promote children’s self-regulation skills was examined from video material recorded in both the intervention and the control group. The first author videorecorded daily routines in the ECEC centres and examined from videos how different situations asking for children’s self-regulation were handled by the teachers. There were 738 video episodes in the intervention group, more than 12 h. Respectively, the control group had 255 video episodes, also more than 12 h.

**Analysis**

Statistical analysis was run for all the three scales (HTKS, CBRS and AES). The repeated measures analysis of variance (ANOVA) and the paired samples t-test were applied to explore the effects of the Kids’ Skills programme. Because the control groups sample size was low, the results were checked with a non-parametric test (the Kruskal–Wallis test). Teachers’ engagement (using the AES) was examined using an independent samples t-test. Statistical analyses were carried out with SPSS 25.

In addition to quantitative measures, teachers’ engagement to promote children’s self-regulation skills was examined with the qualitative deductive content analysis (Elo & Kyngäs, 2008) in the video recordings. This was to obtain more detailed information of the results of the intervention (see Creswell & Plano Clark, 2007). The starting point for the qualitative analysis were the results obtained using the Adult Engagement Scale (AES) (Laevers, 1994). The qualitative analysis had three phases. In the first phase, the teachers’ actions in supporting children’s self-regulation skills were classified into three categories: sensitive, stimulating, and supporting child autonomy (the scale from 1 to 5). Secondly, all the data were reviewed for content and coded for correspondence with these three categories (Elo & Kyngäs, 2008). The next step was to compare differences in teacher performance that explain the different development of children’s self-regulation skills. We used an episode as the unit of analysis, the lengths of which ranged from short interactions to long conversations (30 s to 20 min). The interaction was between the teacher and the child practising self-regulation in either group situations or one-on-one discussions. Of these, different styles of teacher engagement were identified. Finally, teacher engagement was typified as either strong engagement or superficial engagement.
Results

The development of children’s self-regulation skills

The descriptive statistics of the HTKS and the CBRS are shown in Table 3.

After the intervention, there was a statistical difference in the HTKS between the intervention group and the control group, $t(32) = -3.328, p = .002$. In the intervention group, children’s self-regulation skills developed statistically significantly during the intervention, $t(23) = -4.721, p < .000$.

In the CBRS, the number of participants diminished in the first post-measurement and in the delayed post measurement due to some guardians not responding to the study for reasons unknown. According to the repeated measures ANOVA, in the first post-measurement, the intervention group progressed significantly better than the control group, $F(1,24) = 12.42, p = .002$. The difference remained in the delayed post-measurement, $F(1,24) = 9.41, p = .005$. In the intervention group, children’s self-regulation skills developed statistically significantly from the pre-test to the delayed post-test, $t(16) = -3.327, p = .005$. No such development was revealed in the control group.

In order to study the children’s development in more detail, the individual items in the CBRS were analysed. The Kruskal–Wallis test showed a statistical difference between the intervention group and the control group in six items out of 17 (see Table 4). In the post-test and delayed post-test, statistically significant differences were found between the groups in the following three self-regulation items: (item 6) ‘The child responds to instructions and then begins an appropriate task without being reminded’, (item 8) ‘The child finds and organises materials and works in an appropriate place when activities are initiated’, (item 10) ‘The child returns to unfinished tasks after interruption’. In addition, in the following three items proving social skills differences were found: (item 11) ‘The child is willing to share toys or other things with other children when playing; does not fight or argue with playmates in disputes over property’, (item 13) ‘The child does not express hostility to other children physically, e.g. hitting’ and (item 16) ‘The child complies with adult directives, giving little or no verbal or physical resistance, even with tasks that he/she dislikes’.

Table 3. Descriptive statistics for the HTKS and the CBRS.

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
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<th>Post-test</th>
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<th>Delayed post-test</th>
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<td>$M$</td>
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<td>$M$</td>
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<td>HTKS</td>
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<td>Intervention</td>
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<tr>
<td>HTKS</td>
<td>25.91</td>
<td>21.57</td>
<td>23</td>
<td>38.30</td>
<td>22.76</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>CBRS*</td>
<td>3.88</td>
<td>0.61</td>
<td>24</td>
<td>4.06</td>
<td>0.36</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>23.70</td>
<td>24.41</td>
<td>10</td>
<td>21.70</td>
<td>25.77</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CBRS*</td>
<td>3.49</td>
<td>0.67</td>
<td>10</td>
<td>3.44</td>
<td>0.43</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Note: HTKS range 0–60. CBRS range 1–5 (total mean of the 17 items).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Mean, SD, and Group Differences on CBRS’s six items at the post-test and delayed post-test ($n = 27$).

<table>
<thead>
<tr>
<th>CBRS</th>
<th>Post-test</th>
<th>Intervention group $M$ (SD)</th>
<th>Control group $M$ (SD)</th>
<th>$H$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>item 6</td>
<td>Post-test</td>
<td>3.94 (0.68)</td>
<td>3.32 (0.82)</td>
<td>4.34</td>
<td>.037</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.13 (0.72)</td>
<td>3.50 (0.80)</td>
<td>3.97</td>
<td>.046</td>
</tr>
<tr>
<td>item 8</td>
<td>Post-test</td>
<td>4.13 (0.62)</td>
<td>3.68 (0.58)</td>
<td>4.08</td>
<td>.043</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.44 (0.51)</td>
<td>3.83 (0.84)</td>
<td>4.31</td>
<td>.038</td>
</tr>
<tr>
<td>item 10</td>
<td>Post-test</td>
<td>3.88 (0.50)</td>
<td>3.11 (0.88)</td>
<td>8.13</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.13 (0.50)</td>
<td>3.42 (0.79)</td>
<td>6.91</td>
<td>.009</td>
</tr>
<tr>
<td>item 11</td>
<td>Post-test</td>
<td>4.06 (0.68)</td>
<td>3.58 (0.61)</td>
<td>4.02</td>
<td>.045</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.06 (0.57)</td>
<td>3.50 (0.52)</td>
<td>5.80</td>
<td>.016</td>
</tr>
<tr>
<td>item 13</td>
<td>Post-test</td>
<td>4.81 (0.40)</td>
<td>4.11 (0.74)</td>
<td>9.12</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.69 (0.48)</td>
<td>4.00 (0.85)</td>
<td>5.14</td>
<td>.023</td>
</tr>
<tr>
<td>item 16</td>
<td>Post-test</td>
<td>4.13 (0.62)</td>
<td>3.47 (0.77)</td>
<td>6.61</td>
<td>.010</td>
</tr>
<tr>
<td></td>
<td>Delayed post-test</td>
<td>4.25 (0.58)</td>
<td>3.58 (0.90)</td>
<td>4.58</td>
<td>.032</td>
</tr>
</tbody>
</table>

Note: The Kruskal–Wallis test was used to test between-group differences at post-test and delayed post-test in the CBRS’s items.
The descriptive statistics of the teacher engagement (AES) according to the video recorded episodes are shown in Table 5. The means of the AES were calculated from three components: **sensitivity**, **stimulation**, and **autonomy**.

Altogether, 738 episodes in the intervention group were studied. In 379 of them, sensitivity could be judged. Stimulation and autonomy could be judged in 231 and 119 episodes, respectively. In the control group, sensitivity, stimulation and autonomy were observable in 129, 97, and 40 episodes, respectively. The independent samples t-tests showed statistically significant differences between the intervention and the control group in all the three subparts of the AES.

Teacher’s engagement was further studied by observing the episodes qualitatively. In the 738 episodes in the intervention group, teacher engagement was considered to be as strong in 711 cases. On the other hand, in the 255 episodes in the control group, teachers’ engagement was judged as being superficial in 54 cases. Judgement was based on a teacher’s engagement in the interaction with the child and the level of profoundness of supervision and support.

The following is an example of a conversation between a teacher and a child. The child had previously bullied other children during outdoor activities.

### Example episode 1 in the intervention group
At first, the teacher asked the child what had happened in the yard. When the child did not remember, the teacher drew him a situation of play and peers. The child had said bad words to the other child, which gave her a sense of being bullied. The child explained in more detail about their play and why he was angry and bullied others. The teacher continued to draw the situation. The child said he will not bully anymore and will apologize. Next, they discussed what will be done so that this does not happen again, and the child would not say nasty things to his peers. The child wondered if he could think nasty things about his peers in his own mind, to which the teacher said yes, but don’t say them out loud. The teacher said that the child can always come to the teacher when he is annoyed, so they can think together how to get rid of the anger and the feeling of anger subsides so that the child does not bully others. The child said that forgiving himself gives him a better feeling and helps letting go of the nasty thoughts. The teacher also says that teachers are there to support and help the child whenever he needs. Finally, the child says he will no longer bully his peers. (Duration of the conversation 14 minutes)

The example illustrates the teacher’s **strong engagement** to strength-based pedagogy and the development of the child’s self-regulation skills. There the goal is to support the child’s learning by giving him a strategy to learn self-regulation skills with the support of the teacher. The teacher helps the child’s internal speech to develop through reflection. The encounter reflects teacher’s sensitivity and appreciation of the child, where the child is an equal actor whose opinions are heard, and they participate in the evaluation and decision-making of their own actions.

Similarly, in a control group, dealing with situations that challenge children’s self-regulation, the teacher’s interaction with the children can be described as **superficial engagement**, with the intent of apology and prompt handling of the situation, as the following example shows.
Example episode 2 in the control group
Two children are playing a fighting game inside. Peers were reassuring them, teachers were elsewhere. The play continued for 14 minutes and became more violent. Peers asked the teacher for help, who asked the two children to discuss the situation. The children accused other children and each other of bullying. The teacher asked them to make a reconciliation, which the other child refused. The teacher repeated the question and the children promised to play in harmony. (duration of the debate 2 minutes)

There were several such situations. It seems that the pedagogical goal in these was not the child’s learning but reconciliation and solving a challenging situation (see Kurki et al., 2017). The situation could be described as a lost moment in pedagogy (see also Heikka, Koivula, Hautakangas, & Suhonen, in press).

The difference in the number of recorded episodes (see Table 5) was based on the availability of suitable situations. In the intervention group, teachers were frequently close to the children, even when they were playing freely. Children in the control group often played freely and encountered conflict situations of which the teachers were unaware meaning they had no opportunity to support children’s self-regulation. Thus, it is also about the teacher’s ability to organise the activities of a group of children.

Discussion
The aim of this study was to examine what impact the Kids’ Skills intervention has on children’s self-regulation skills in Finnish ECEC. In addition, the teachers’ way to promote children’s self-regulation skills through the intervention was studied. Previous studies have shown that children can learn self-regulation skills when explicitly taught in interventions (e.g. McClelland et al., 2017; Schmitt et al., 2015). However, the applicability of the programmes has not always been optimal. Programmes may require additional resources, such as instructional specificity, multiple components, or economic resources (Upshur et al., 2017; Ursache et al., 2012). Hence, more research on well-working, reliable, valid, and sensitive interventions to improve self-regulation are needed. In particular, studies in ecologically valid surroundings are required, that is, everyday interactions in ECEC settings are in high demand (Kurki et al., 2017; McClelland & Cameron, 2011).

Kids’ Skills is a widely used Finnish programme aimed at improving children’s self-regulation skills (Furman, 2003). However, the research of the Kids’ Skills programme has been lacking in Finland (Becker, 2014; Bentner, 2014; Perband & Rogner, 2019). The purpose of the current study was to address this gap and to gain knowledge of a controlled self-regulation improving intervention to benefit early childhood education globally.

The study reveals that the self-regulation skills of the intervention group improved statistically significantly during the study. No such progress was found in the control group. Both the measure directly assessing children’s ability to regulate their actions (the HTKS task) and the measure asking for adults’ experiences of the children’s self-regulation skills (CBRS) evidenced a statistically significant difference between the intervention and the control groups. Furthermore, according to the adults’ experiences, the effect of the programme was maintained five months after the end of the 10-week programme. The children also showed motivation to learn new self-regulation skills during the intervention.

The advantage of the Kids’ Skills programme seemed to be in its repetitive mode of actions. Repeated practice produces benefits, as in the Kids’ Skills programme, the child practises self-regulation skills in all situations of the day with the support of a teacher (see Diamond & Lee, 2011). Researchers widely acknowledge that interactional processes play a decisive role in the learning and development of self-regulation skills (e.g. Kangas, Ojala, & Venninen, 2015; McCaslin, 2009; McClelland & Cameron, 2011). For a child with poor self-regulation skills, teaching the strategy of how to learn to control their emotions and behaviour, had significant benefits in our intervention as well as in previous studies (see Bronson, 2000).
In this study, the teachers’ engagement was understood as the way the teacher supported children’s sensitivity, stimulation and autonomy and by promoting children’s agency while they were practising the new skill. The teachers’ engagement in promoting the children’s self-regulation skills was assessed using a questionnaire that was analysed by using quantitative methods (the AES). Based on the video observations, the engagement of teachers in the intervention group was statistically significantly higher than in the control group. The qualitative data and its results confirm and explain the results obtained quantitatively. Based on these data, the possible explanatory factors for the results of the intervention group were found to be the teachers’ engagement to promote the child’s self-regulation skills as framed by the Kids’ Skills programme.

One of the benefits of the Kids’ Skills programme is its applicability. The programme can be modified to fit the needs of different children and it does not have a certain structure that must be closely followed. The intervention group teacher followed the guidelines and steps of the Kids’ Skills programme. They were committed to supporting the children’s development, as well as to nourishing the children’s strengths in a solution-focused way (e.g. Furman, 2003). The teachers were there to support the children when needed and to remind them to practise the skills. It was also noted that conflict situations were rare and in those cases, the conflicts were discussed with the child. In these challenging situations, the presence, support, and reassurance of the teacher were also important for the child. Teachers in the intervention group were sensitive to the needs related to the regulation of children’s emotions and behaviour. Teachers stimulated children’s thinking through reflection so that children’s own internal speech develops to regulate their behaviour (see Barkley, 2012). Also, children had their say in the design, decision-making and evaluation of their developing self-regulation skills. Thus, children participation was seen as an important resource for solving their problems (see Furman, 2003; NAE, 2014; Zimmerman, 1999). Teachers increased children’s autonomy, initiative, responsibility, and agency by encouraging children to make choices and to be an active participant in decision-making. The Kids’ Skills programme required teachers’ professional competence in adapting the programme principles in everyday situations. However, the programme also seemed suitable for training professionally young teachers due to its clear step-wise principles to foster children’s self-regulation skills. This is noteworthy, because in some studies, the influence of the teacher on the effectiveness of the programmes has been considered to be too high (e.g. Lillard, 2017).

The results showed that there were no great differences in the engagement between the teachers in the intervention group in promoting children’s self-regulation skills. To contrast that, there were differences in sensitivity, stimulation, and support for children’s autonomy between teachers in the control group. They showed weak engagement to develop children’s self-regulation skills, as the observed situations were dealt with superficiality and quickly with children. For example, after conflicts between the children, the goal only seemed to be to make the children apologise to each other with no pedagogical discussion (see also Kurki et al., 2017).

Our present study complements a few previous findings by showing that the Kids’ Skills programme is a usable programme for developing children’s self-regulation skills (e.g. Bentner, 2014; Perband & Rogner, 2019). In summary, we believe that the Kids’ Skills key factors, such as a positive and solution-focused perspective, and strength-based pedagogy promoting child’s self-regulation skills, combined with teacher’s support and engagement, helped to achieve the goals.

**Limitations**

Several limitations of this study should be noted. Firstly, only 28 children participated in the intervention. More research on diverse child groups is needed to confirm the results. However, despite the small sample size, the research data can be considered to be diverse and rich. Secondly, although all teachers in the intervention group seemed to work in a manner that helped the children’s self-regulation skills more emphasis should be put on teachers’ capability to apply the programme.
Thirdly, when the teachers evaluated the children’s skills, the objectivity may have been lost when comparing the children. That means, a child in a group with especially challenging behaviours may have been rated ‘as a child with good self-regulating skills’ even with minor true advancements in their skills (Hamre, Pianta, Downer, & Mashburn, 2007). Fourth, this study did not specify what kind of self-regulation skills the children most needed. This allowed a wide range of children to participate in the study. Children’s self-regulation skills were different, but a common factor was the need to practise them. Fifth, all children in the study matured during the intervention. What is accountable for the intervention and what for other issues cannot be deduced.

Conclusion

To conclude, our results concerning the Kids’ Skills programme are promising. The programme seems suitable for promoting children’s self-regulation skills. It is concerned with strength-based pedagogy and has a solution-focused perspective, a positive attitude towards the child’s evolving self-regulation skills and the 15-step progressive skill training provide the teacher with an efficient pedagogical tool to promote children’s self-regulation skills. The Kids’ Skills intervention made visible the teachers’ strong engagement to develop children’s self-regulation skills and the positive interaction, such as how the teacher supports the child in challenging situations and strengthens children’s self-regulation skills. The teachers in the intervention group modelled the emotions, thinking and activities for the child. This allowed the child to use their own internal speech to cope in similar situations and provided the child with an opportunity for regulation through their own reflection. This describes the teacher’s sensitive, stimulating and the child’s autonomy supporting engagement style.

When examining a child’s self-regulation skills, more attention could be paid to everyday pedagogical practices in ECEC classrooms. Teachers should pay attention to the daily routines and schedules. Constantly hurrying from one activity to another may burden children with low self-regulation skills and leave them with fewer opportunities to learn them. This was demonstrated in the control group. Thus, teachers should pedagogically plan how they support the development of children’s self-regulation skills in ECEC settings (see also Ranta, 2020).

Interventions to support self-regulation skills would also be important educational themes in the education of both student teachers and professional teachers. We recommend that teachers boldly experiment with interventions that develop a child’s self-regulation skills and thus enable children to develop skills that are important for their overall positive development (e.g. McClelland & Cameron, 2011).

In the future research, more large-scale mixed-method research and diverse child groups participating in the programme will be needed. The low number of participants in the present study limits the generalisability of the results. However, the findings suggest the potential of the programme to support children’s self-regulation skills. In particular, the programme with its easy-to-apply strategies seemed to equip the children with the capacity to increase their reflection of self-regulation in challenging situations. All in all, we believe that self-regulations skills can and should be taught and learnt in early childhood education settings.

Note

1. In Finnish the programme is called Muksuoppi, in Swedish Jag Kan, in German Ich Schaff’s and in French Je Suis Capable

Acknowledgements

The authors would like to extend their sincere thanks to the children who participated in the study, and their guardians and teachers.
Disclosure statement
No potential conflict of interest was reported by the author(s).

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