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Ritva Mickelsson

Lessons Learned from Horses
Three Pedagogical Interventions Promoting Well-being
of Students with Special Educational Needs

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Emil Cedercreutz's statue *Maternal love* (Helsinki Art Museum), photographed by Milla Turunen

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Abstract

The study examines whether optional interventions influence the well-being of special class students. The interventions were implemented during the spring term, starting in February, with a post-test conducted in May. Equine-assisted social education (EASE) is an informal non-verbal intervention with horse activities. Aggression Replacement Training® (ART) is a cognitive behavior program designed for special class students improve their social competence and control their anger. Co-operational mathematics (MATH) offers students a way to collaborate on mathematical and problem-solving tasks. The intervention groups were compared with each other and with a treatment as usual (TAU) control group. In addition, how students, parents, and teachers conceived of the students' school success and well-being was assessed. The main instrument was the Achenbach System of Empirically Based Assessment (ASEBA), used to collect data concerning students' school success and well-being. The parallel instruments assessed aggression, empathy, locus of control, and loneliness. Participants included 60 students from a regional special class consisting of third- and seventh-grade students. Results from an Independent Kruskal-Wallis H test analysis indicate that those students having good relations with their parents perceive themselves as more successful in mathematics. No evidence was found that the opinions of students, parents, or teachers concerning school success related to the length of time in special class education. However, the longer the 7th grade girls had studied in a special class, the lower their aggressive behavior and rule-breaking behavior. Results from the Related-Samples Wilcoxon Signed-Ranks test indicate that withdrawn-depressed symptoms, somatic complaints, social problems, attention problems, and aggressive behavior all improved among boys participating in EASE. However, the internal locus of control for both those participating in EASE and MATH was lower in the post-test assessment. The ART group showed improvement in thought problems and rule-breaking behavior. The (TAU) control group also demonstrated improvement (in withdrawn-depressed symptoms, thought problems). Moreover, TAU was the only group to improve in empathy.

Keywords: equine-assisted social education, special education, well-being, intervention, informal learning

Ritva Mickelsson

Hevoset oppimisen tukena

Kolme pedagogista interventiota erityistä tukea tarvitsevien oppilaiden hyvinvoinnin edistämiseksi

Tiivistelmä

Tässä tutkimuksessa selvitään, onko ylimääräisellä interventiolla vaikutusta erityisluokan oppilaiden hyvinvointiin. Interventiot aloitettiin helmikuussa, kevätlukaudella, ja jälkimittaukset suoritettiin toukokuussa. Sosiaalipedagoginen hevos toiminta (EASE) toimii informaalisena oppimisena hevosten kanssa toteutettavine harjoituksineen. Aggression Replacement Training® (ART) on kognitiiviseen käyttäytymisterapiaan pohjautuva ryhmämuotoinen interventio, jolla tavoitellaan sosiaalisten taitojen kehittymistä ja aggression hallintaa. Yhteistoiminnallinen matematiikka (MATH) tarjoaa oppilaille tavan toimia yhdessä matemaattisten ja ongelmanratkaisutehtävien parissa. Interventioihin osallistuneita ryhmiä verrattiin sekä toisiinsa että ryhmiin, jotka eivät osallistuneet ylimääräiseen ohjelmaan (TAU) ja toimivat kontrolliryhminä. Lisäksi tarkasteltiin oppilaiden, vanhempien ja opettajien käsityksiä oppilaiden koulumenestyksestä ja hyvinvoinnista. Tutkimuksen tärkein mittari oli Achenbach System of Empirically Based Assessment (ASEBA), jolla saatiin tietoa oppilaiden koulumenestyksestä ja hyvinvoinnista. Rinnakkaismittarit tuottivat tietoa aggressiivisuudesta, empatiasta, hallinnan tunteesta ja yksinäisyyden tunteesta. Tutkimukseen osallistui 60 kolmas- ja seitsemäsluokkalaista, jotka opiskelivat alueellisissa erityisluokissa. Kruskal-Wallis H -testin tulokset osoittivat, että ne oppilaat, joilla oli hyvät suhteet vanhempiensa kanssa, tunsivat onnistumisia matematiikassa. Tutkimuksessa ei löytynyt näyttöä siitä, että oppilaiden erityisluokkaopetuksen ajanjakson pituudella olisi ollut yhteyttä oppilaiden, vanhempien tai opettajien käsitykseen oppilaiden koulumenestyksestä. Kuitenkin mitä pidempään 7. luokan tytöt olivat olleet erityisluokkaopetuksessa, sitä vähemmän heillä esiintyi aggressiivista tai ohjeiden vastaista käyttäytymistä. Wilcoxon Signed-Ranks-testin tulokset osoittivat, että EASE-interventioon osallistuneilla pojilla vähenivät masentuneisuus (vetäytyminen), somaattiset oireet, sosiaaliset ongelmat, keskittymisen ongelmat sekä aggressiivisuus. Sekä EASE- että MATH-interventioihin osallistuneiden sisäinen hallinnan tunne väheni jälkimittauksessa. ART-ryhmällä vähenivät ajattelun ongelmat ja sääntöjä rikkova käyttäytyminen. TAU-kontrolliryhmällä näkyi myös kehittymistä, masentuneisuus (vetäytyminen) ja ajattelun ongelmat vähenivät. Lisäksi TAU oli ainoa ryhmä, jolla empatia lisääntyi.

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Show me your horse and I will tell you what you are.
- English Proverb -

This research has been inspired by the moments during which I have noticed the “power” of horses on my students with special needs. It has been a long project and there has been times when I felt hopeless or just daunted.

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*“... being that little girl in a tram
brown eyes wide open*

raising up onto her toes... eager to see

*that desirable statue of a mare
tenderly nurturing her filly”*

I have noticed how powerful “tools” horses can be for igniting students’ personal growth. Horses are temperamentally well-balanced animals, but their imposing size, tremendous strength, and keen intuition mean you need to approach them with respect, vigilance, and extreme sensitivity. I am interested in the role of horses in the learning process, whether they improve well-being or the pedagogical relationship between adults and students?

My personal path as an educator and an equestrian, as well as my experiences with students at the stable, have served as sparks for this study. I feel that the same interaction models work both with horses and at-risk students: respect, trust, unconditional positive regard, authenticity, and boundary setting, as well as warmth, patience, and humor. In the beginning of my teaching career, I practiced behaviour traits separately with students and horses, until I realized the change in students when they worked with horses. This caused me to think about interaction and connection in a new way.

I have followed these “hoof tracks,” developing ways to include equine assisted activities (EAA) as a special education teacher or then leading a school welfare group as principal. My daily work with well-being issues and my experiences with various needs and situations have made me wonder if “equine-based invisible inner power” could provide greater well-being for special needs students in addition to other school-based interventions. Thus, this question is the key issue in the study. I have felt the same “healing moments” experienced by students in the presence of my horses when things do not feel right. Whenever there are hard times, or sorrow and loss, the presence of a horse seems to provide relief, leading to a better mood.

Throughout my career as a special class teacher and a principal, I have thought about how students benefit and what disadvantages they may face when placed in a special class. In addition, precisely what kinds of practices and activities make a special class education beneficial for such students? Beside the smaller group size with a special educator, should there be an additional intervention or a treatment? Or is it the how and the way in which special class teachers interact with students and facilitate learning?

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1 Introduction

The objective of this study is to implement and compare three school-based intervention programs and their connections with well-being, since students with learning or other disabilities are at risk of developing severe emotional disorders in adolescence (Durlak & DuPre, 2008; Joseph & Strain, 2003; Landrum, Tankersley, & Kauffman, 2003). The emotional growth of at-risk youth can be improved by positive and effective interventions at the critical adolescent age (Ewing, MacDonald, Taylor, & Bowers, 2007). Though certain schools have implemented animal-assisted programs, like school dogs, the outcomes of such interventions have not adequately been reported or analytically compared (see, e.g., Hattie, 2008). In this study, I chose these three interventions (equine-assisted social education, Aggression Replacement Training, and co-operational mathematics) since I had competence and training for these programs. In addition, all these three interventions had elements to learn social skills and teamwork.

Students' psychological and social well-being

In this study, self-determination theory (Ryan & Deci, 2000) offers essential concepts and principles for understanding student well-being. Since this is a multidisciplinary study of a complex phenomenon, additional concepts from other theories are also introduced.

School has a specific role in the well-being of the student, specifically regarding whether students achieve favorable outcomes (Taylor, Oberle, Durlak, & Weissberg, 2017) and have positive relations with their teachers and peer group (Cole & Cole, 2000). Students' learning outcomes are predicted by many factors. One of them is the extent to which parents pay attention to their children, since parental interest greatly influences student achievement (Muntoni & Retelsdorf, 2019; Ryan & Deci, 2017; Gunderson, Ramirez, Levine, & Beilok, 2012; Flourin, 2006). Further, the teacher-student relationship is also significant in determining students' skills in school subjects and an important predictor of students' outcomes (Wang, Rubie-Davies, & Meissel, 2018; Holfve-Sabel, 2014; Gunderson et al., 2012; Rubie-Davies, Blatchford, Koutsoubou, & Basset, n.d.). In addition, teachers' expectations for academic achievement are lower than average for students with special needs (hereinafter SEN students) (Krischler & Pit-ten Cate, 2019). Nilsen Kvande, Bjørklund, Lydersen, Belsky, and Wichstrøm (2019) argue that SEN students do not benefit from special education received during early school years. On the contrary, special education can adversely affect the motivation and school success of such students. Therefore, this study asked parents and teachers to compare students' knowledge in mathematics and Finnish language with that of their peer group. Further, we compare our data with students' data to ascertain whether parents and teachers have similar opinions as

students concerning the two school subjects. In addition, students' special education years were added as one explanatory variable to explore in relation to students' overall well-being.

Schools are more than just institutions for learning. They are settings for student development. A school culture that fulfils students' basic psychological needs (competence, autonomy, and relatedness) at the same time improves their well-being. Besides well-being, students' motivation could also be enhanced by fulfilling these basic psychological needs (Ryan & Deci, 2017). Furthermore, teachers who are empathic and provide students with autonomy also support students' engagement with learning (Assor, Kaplan, & Roth, 2002). In addition to the support they receive from parents and teachers, students' own perception of the locus of control is an important element associated with achievement. When students sense an internal locus of control, they likewise sense that they can influence situations and outcomes. In contrast, if they feel that they do not have an impact on events in their lives, then they are likely to have an external locus of control (Flouri, 2006).

Troubled behavior, learning problems, low self-esteem, and disappointments caused by failing assignments are some factors that expose children to risks (Cole & Cole, 2000). Therefore, children should be supported by mechanisms that help them to cope with problems, like providing relevant and practicable assignments that also include opportunities for social and non-academic success. Accordingly, in this study all three interventions involved collaborative practices teaching teamwork and better interaction with classmates.

Resilience, the way an individual reacts to trouble, and protective factors are all closely interrelated (Rutter, 1987). Persons with easy-going temperament, higher self-esteem, and a stronger internal locus of control generally prove more resilient (Masten, Best, & Garmezy, 1990). The study data accounted for resilience, risk, and protective factors when assessing well-being symptoms that could harm or enhance the well-being of students (for example, attention problems, social problems, aggression, loneliness, hobbies, or empathy).

Frames from social pedagogy

Learning problems are considered risk factors for individuals (Armstrong & Boothroyd, 2007; Arthur, Hawkins, Pollard, Catalano, & Baglioni Jr., 2002; Cole & Cole, 2000; Kagan, 1990). Thus, SEN students take part in intervention programs to enhance their well-being. Active citizenship is an essential social pedagogical issue that is strengthened by increasing the welfare and well-being of those at risk (Hämäläinen, 2012). Therefore, social pedagogy provides frameworks for this study by binding science and practice (Hämäläinen, 2015), with the aim being to improve inclusion and integration (Rothuizen & Harbo, 2017) and provide a method for special education to meet students' social needs (Hämäläinen, 2015).

Since the intention is to foster social growth, pedagogical standards are implemented by means of social pedagogical practices. This covers both psychological aspects and therapeutic methods, defined mostly as dialogue and community (Hämäläinen, 2015). Social pedagogical practices are open to new procedures and do not follow any fixed methods (Rothuizen & Harbo, 2017). Instead of being a specific set of specific pedagogical practices (Hämäläinen, 2015), social pedagogy is rather an approach and attitude (comprising community-based, activity-based, and experience-oriented methods) that emphasizes interpersonal relationships as vital facilitators of actions (Úcar, 2013). According to Rothuizen and Harbo (2017), an educator's task is to assist students in transitioning away from a negative cycle via using contact (relationship) and a bridge-building approach (figure 1).



Figure 1

An educator's task is to work with a negative circle (Rothuizen & Harbo, 2017, with permission from authors).

This demands an approach involving three dimensions, using the “*head, heart, and hands*.” Knowledge is obtained and connections understood by using the head. The heart represents feelings that are activated in various situations. Hands are used when the world, knowledge, and feelings are processed further (Rothuizen & Harbo, 2017). The educator's role is that of participant rather than leader, with all working towards completing the same task (Mickelsson, 2019).

Social pedagogy is a discipline encompassing multiple concepts derived from the academic and scientific fields and various activities based on a pedagogical viewpoint. In general, social pedagogical theory emphasizes relationships between individuals and their social environments, paying attention to social integration and emancipation processes. Since education is considered an opportunity to support disadvantaged people, social pedagogy underlines community and its

importance to human development. Special attention is also paid to the pedagogical meaning of people's spontaneous common actions within a self-governing community (Hämäläinen, 2015).

Animal-assisted programs

Animal-assisted activities intentionally involve animals in therapeutic and learning programs (Kruger & Serpell, 2010). Despite these programs having been widely used for decades, more research is still required to underscore their significance (Kruger & Serpell, 2006; Bizub, Joy, & Davidson, 2003). Recently, the field of equine-activities research has devoted more interest to equine-assisted activities and their influence on human health. According to Hart (2000, p 94.), the "horse affords an outstanding and totally exceptional physical experience in cheerful social surroundings."

Earlier research has suggested promising outcomes concerning equine-assisted activities, for instance that the anger level of many boys decreased after participating in a therapeutic riding program (Kaiser, Smith, Heleski, & Spence, 2006). Based on the results of previous research, this study also assesses anger as a way of measuring aggression. Several reasons might explain the reduced anger among boys after participating in a riding program, including the relationship children have with horses, the social surroundings provided by a horse camp, activities like horseback riding, and increased contact with nature, or a combination of all of the above (Kaiser, Spence, Laverne, & Vanden Bosch, 2004.) Another study found that equine programs provide students with the skills to achieve protective factors and greater resilience at avoiding potential undesirable life outcomes (Burgon, 2011). In addition, non-verbal and non-judgmental relationships as well as the power possessed by horses are recognized as key therapeutic elements of equine programs (Tuuvast, Carlsson, & Norberg, 2017; Waite & Bourke, 2013; Burgon, 2011; Karol, 2007; Schultz, Remick-Barlow, & Robbins, 2007; Frewin & Gardiner, 2005). These key elements can attract adolescents from a very early point in equine-assisted programs. Therefore, researchers have suggested that horses can be effective in engaging young clients during the initial stages of a program (Waite & Bourke, 2013). Given the results provided by earlier studies concerning non-verbal relations, the EASE intervention conducted for the purposes of this study involves mostly non-verbal practices completed with an entire group.

Contrary to these positive outcomes, other studies have posited that the human-equine bond does not have any positive influence on children's self-esteem or frustration tolerance. However, some argue that children exhibiting more anxious and depressed behavior still benefit from equine-assisted activities by feeling safe and more comfortable when horses are present (Greenwald, 2001).

Despite the fact that horses and a stable environment are increasingly being used in versatile ways, most research connected with equine-assisted programs

concentrates on therapeutic processes and outcomes (Kendall & Maujean, 2015; Gergely, 2012; Bachi, Terkel, & Teichman, 2011; Karol, 2007). However, several earlier studies have focused on equine-assisted learning (Pendry, Carr, & Vandagriff, 2018; Frederick, Hatz, & Lanning, 2015; Burgon, 2011; Dell, Chalmers, Bresette, Swain, Rankin, & Hopkins, 2011; Ewing et al., 2007), making this study relevant and important for being the first study conducted specifically in Finland on equine-assisted social education. Furthermore, this study departs from traditional studies on equine-assisted activities by implementing an equine-assisted social education as a horse activity in an informal, out-of-school setting and applying transversal competencies to the activities. In other words, this intervention was made a part of students' school day instead of being treated as a recreational activity or form of rehabilitation. Moreover, since it is a multiple-case study with a mixed methods approach, it responds to the lack of more recent relevant studies in the field of equine-assisted activities.

Skills and activities supporting development

The goal of education is to broaden students' conception of the world. To reach this stage of knowledge, relevant skills are improved in basic education by means of core subjects, multidisciplinary learning modules, and transversal competence, all of which are defined in the national core curriculum (FNAE, 2014). Further, the Finnish national core curriculum embraces the ethos of fostering inclusive environments. This is realized by, for example, valuing empathy and providing support for students' learning and development. Beside education, students' development is supported by other activities as well. In addition, the national core curriculum suggests that learning and thinking are enhanced by physical exercise, language use, activating diverse senses, and experiencing a sense of joy (FNAE, 2016). Acknowledging this ethos, the interventions conducted in this study embrace elements included in the national core curriculum.

Bronfenbrenner (1974) claimed that the most powerful intervention programs are closely connected to students' families and other ecological elements and life conditions. Despite interventions being valuable methods for improving achievement and well-being, they are rarely practiced in schools (Durlak & DuPre, 2008). However, to cite Hattie (2008, p. 22), "*what teachers do matters.*" This means that teachers have an impact and adding variety to students' educational experience makes a difference.

This study employed three school-based interventions to encourage schools to implement interventions for students' well-being. However, the EASE intervention involved activities that integrated information with a multisensory learning program. Research done by Shams and Seitz (2008) found that a multisensory setting provides an optimal learning environment for the human brain. Thus, instead of implementing only auditory and visual sensory exercises during the program, we also included activities that stimulated students' smell, kinesthetic, and

tactile senses. Morgan (2019) argues that an efficient teacher should use intensive communication to engage students. Despite the fact that communication usually only engages a single sensory stimulation, the practice of involving multisensory strategies in an educational setting offers students with learning problems better opportunities to enhance their learning (Morgan, 2019).

The EASE program also includes the participation of students' families in the last session, when students choose and demonstrate one horsemanship skill that they have learned. This practice offers students a feeling of autonomy, competence, and relatedness. Furthermore, the EASE intervention involves physical activities performed either without or with horses. In addition to the demand for students to be attentive when around horses, horses provide students with multi-sensory experiences: smell, touch, sight, hearing, and touch. The ART and MATH interventions comprise exercises that involve language and the feeling of accomplishment when tasks are completed through successful teamwork. Remarkably, even though the Finnish National Core Curriculum 2016 is unique because of its focus on transversal competences, few, if any, studies have assessed equine-assisted interventions based on the curriculum. According to Thuneberg, Salmi, Vainikainen, Hienonen, and Hautamäki (2022), applying transversal competences in various surroundings improves students' cognitive skills, problem-solving skills, and hands-on skills, allowing them to make concrete products or draw specific conclusions. Therefore, a teacher's ability to understand and involve such concepts in everyday schoolwork is essential for improving students' attitudes, skills, values, knowledge, and desire to learn (Thuneberg, Salmi, Vainikainen, Hienonen, & Hautamäki 2022). This means that the Finnish curriculum account for and supports informal learning that takes place outside school as a way to promote student well-being. This study is thus the first to focus on horse-related activities implemented as part of the Finnish basic education.

Research design

This multi-case study compares the outcomes of three interventions with respect to the well-being of SEN students, who were placed in regional special classes for students with learning problems. Usually, intervention research in the field of education uses randomized control trials (RCTs). This research design provides information concerning causal relationships between the intervention and its outcomes. However, the environment and context in which the interventions were implemented are often not studied in their entirety. Instead of examining "what works" in education, it is essential to develop systematized and groundbreaking programs to comprehend the outcomes of interventions (Outhwaite, Gulliford, & Pitchford, 2020).

Thus, this study presents a pragmatic program that connects quantitative analyses with qualitative data to study the connections between the implemented interventions and their outcomes. The study included a pre-test/post-test control

group design, since all groups completed questionnaires both before and after the intervention (the control group had the same interval as the intervention groups). For that reason, the study has used a mixed method approach. Mixed method designs are widely used in human health intervention research since quantitative methods measure the outcomes of interventions, while the process is better understood with information provided by qualitative methods (Palinkas, Arons, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011). The primary data consists of questionnaires completed by students, parents, and teachers. The measured dependent variables were well-being symptoms from the Achenbach System of Empirically Based Assessment (ASEBA) (Achenbach, 1991). In addition, parallel instruments provided data concerning aggression, empathy, loneliness, and locus of control. The quantitative data was collected at three points, before the intervention (pre-test), immediately after the intervention (post-test), and six months after the intervention (delayed post-test). Based on recommendations by Beck and Katcher (2003) concerning animals' influence on human health, I also collected data concerning students' pets, but the findings are not reported in this study. In addition to the quantitative data, observations and notes concerning the equine-assisted intervention yielded important qualitative data.

This study assesses whether additional interventions for SEN students impact their well-being. In other words, interventions are viewed as tools for change, as outlined by like Frazer and Galinsky (2010). Furthermore, the best outcomes are achieved when the desired action is strengthened, or when the results describe the steps needed design and develop an intervention program that promotes social skills (Frazer & Galinsky, 2010).

The three interventions discussed in this study were implemented during eight-week periods. Altogether, 27 students from the 3rd grade and 33 students from the 7th grade took part in this study. They received treatments in their own groups: 17 students received an equine-assisted social education (EASE) intervention, 18 students received Aggression Replacement Training® (ART), nine students received co-operational mathematics (MATH) intervention, and 16 students received no treatment (TAU). The EASE intervention was conducted at the stable environment with group exercises involving non-verbal tasks either with or without horses. The ART intervention consisted of social skills exercises practiced in pairs or in groups. The MATH intervention included basic calculation tasks, but problem-solving assignments also needed to be completed with a partner or in small group. Students who participated in the TAU groups received special class education just like the other groups, but without any additional interventions. I then compared the well-being outcomes of students based on the four treatments. Beside traditional classroom-based interventions, this study provides results for an equine-assisted intervention implemented in a school context.

Experimental learning environments effectively develop young people's life skills (Smith, Swinker, Comerford, Radhakrishna, & Hoover, 2006; Fox &

Avramidis, 2003; Boyd, Herring, & Briers, 1992). Anderson and Karr-Lilienthal (2011) and Sansom (2018) underline the benefits of attending 4-H horse programs, including increased personal responsibility and decision-making and leadership skills. Despite the benefits, there is still a lack of funding and resources for equine activity programs (Smith et al., 2006). Consequently, I explore the question of whether SEN students benefit when horses are included as co-teachers in the social learning process and what problems may occur.

Despite this study aims to investigate causal relationships between the intervention and its outcomes, a comfort sampling is implemented instead of randomized control trial. In addition, as the focus is to find out what works with SEN students the aim is to present a pragmatic equine-assisted program in experimental learning environments. This is implemented with a pre-test/post-test control group design.

In my career as an educator, I have met students without any interest in or motivation to engage with conventional forms of learning. Such students have experienced many disappointments and failures in life. As a result of their behavioral patterns, these students have encountered both negative parental influences at home and misunderstandings at school. Hence, many of them regard adults (principals, teachers, and other adults), with distrust and a certain level of discomfort. Therefore, new constructive interventions to support emotional and social growth are needed. As is suggested here, bringing students and learning out of the school building and offering extraordinary learning surroundings “gives more than it takes.”

2 Psychological and social well-being in school context

The human need for psychological growth and integration dates to Aristotle. Individuals have searched for challenges by altering cultural practices and finding new perspectives (Deci & Ryan, 2002). Life satisfaction, the presence of positive emotions, and the absence of negative emotions are basic components of an individual's subjective well-being (SWB) (Ryan & Deci, 2001; Bird & Markle, 2012; Emmons, 1986). SWB has to do with how an individual evaluates the quality of his or her life, which includes cognitions and feelings as well as thoughts about whether they are leading to a desired and fulfilling life (Diener, 2012).

There are several approaches to understanding the concept of well-being. The hedonic approach to well-being emphasizes happiness and underlines enjoyment and a life that proceeds “smoothly,” without any undue stressors. A different viewpoint is provided by the eudaimonic approach, which emphasizes intentions and self-realization. An individual's well-being is defined by the extent to which he or she is able to function (Ryan & Deci, 2001). SWB is an aspired outcome, since it promotes success and predicts the future (Diener, 2012).

When the school context is considered, the eudaimonic approach to well-being is more favorable than the hedonic approach since individual wellness is more than just a personal question. Moreover, Ryan and Deci (2017) argue that the hedonic approach to well-being could be harmful to an individual's growth, highlighting pleasure and comfort above all else. Instead, the eudaimonic approach to well-being encourages individuals to take positive actions with a definite character that guide them towards an admirable way of life. In addition, proper nurturing and asserting what is best within an individual leads to happiness. According to self-determination theory (SDT), the primary elements of eudaimonic well-being are a sense of competence, relatedness, and autonomy, which has to do not so much with defining well-being as cultivating it (Ryan & Deci, 2001). Thus, the interventions conducted for the purposes of this study had the aim of implementing desirable actions for students' eudaimonic well-being, meaning that the programs sought to implement activities that promote desired values and truly engage students. In addition, the specific programs established in a school context foster valid needs and cultivate eudaimonic well-being.

Mental health has valuable elements, such as an individual's capacity for personal growth and self-acceptance. Favorable outcomes are achieved by having positive feelings about oneself and positive relations with others. Individuals may sense stronger feelings of empathy, be capable of deeper friendship and love, and be able to identify with the experiences of others (Ryff, 1989.) Personal growth is evident when individuals believe in and develop their own potential (Bird &

Markle, 2012). Bird and Markle (2012) assert that personal goal setting, structured mentoring or life coaching, increasing a sense of gratitude, problem solving, and interpersonal skills are the key factors for well-being. Additionally, aims and goals allow individuals to sense purpose in their life, that it has meaning for the future (Ryff, 1989; Emmons, 1986). Instead of seeking external approval, individuals have their own standards for assessing themselves (Ryan & Deci, 2001, 2017; Ryff, 1989). For maximum functioning, environmental mastery provides individuals with the ability to benefit from the opportunities offered to them; it results when they control and shape their environments (Ryff, 1989).

Schools influence young people in a myriad of ways since most adolescents attend school on a daily basis (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). In other words, schools are institutions with social capital and play an important role in students' well-being (Holfve-Sabel, 2014; Seligman et al., 2009; Zins, Bloodworth, Weissberg, & Walberg, 2007). Academic achievements and performing well in school are connected to SWB from elementary school through high school (Bird & Markle, 2012). When students' social-emotional competencies are promoted, both elements essential to well-being, academic success and health increase. Besides improved behavior and well-being, evidence has also shown a general improvement in learning (Banerjee, Weare, & Farr, 2014; Cohen, 2006).

UNICEF1 (2007) has linked children's social, emotional, psychological, and mental health needs to the overall standing of a nation. These social schemas are emphasized in many Western countries. Since studies had demonstrated synergy between health and education, concerns have emerged about educational policies that focus more on academic testing than issues of student well-being. While psychological well-being is certainly valuable in its own right, the connection is bi-directional in a classroom context: better education produces improved health outcomes, and better health improves academic achievement among students (Bonell, Humphrey, Fletcher, Moore Anderson & Campbell, 2014). Therefore, connecting academic skills and education with social, emotional, and ethical competencies promotes a strong foundation for love, work, and acting responsibly as a full member of the community (Seligman et al., 2009; Cohen, 2006). Also, good social-emotional skills are indicators of students' ability to learn and solve problems non-violently (Cohen, 2006).

Pro-social relationships depend on how well individuals can provide care for others, understand social situations, control their anger and aggression, and be able to reconcile conflicts in a positive manner (Gundersen, 2010). Although students' social-emotional development is admittedly important, the focus has

¹ "The true measure of a nation's standing is how well it attends to its children – their health and safety, their material security, their education and socialization, and their sense of being loved, valued, and included in the families and societies into which they are born" (UNICEF, 2007).

seldom been on promoting health, safety, or citizenship (Zins et al., 2007). Bonell and colleagues (2014) compared countries with better academic results. They found that besides academic outcomes, Singapore, Australia, Sweden, and Finland also emphasize the pro-social development and well-being of students.

A Biannual School Health Promotion study conducted in 2018 found that students' well-being decreases from 4th and 5th grade to 9th grade² (Halme, Hedman, Ikonen, & Rajala, 2018). In addition, it revealed issues concerning gender and its relation to well-being. Girls reported more feelings of loneliness than boys, but boys reported feeling that they do not have any close friends. At the same time, weekly activities and hobbies have a positive impact on adolescents' life satisfaction and life skills. Moreover, active adolescents exhibit more healthy behaviors, are less overweight, and engage in less binge drinking (Halme et al., 2018).

Various school programs aim to support students' well-being with diverse objectives ranging from sports-based programs for instilling life skills and social competence (Anderson-Butcher, Iachini, Riley, Wade-Mdivanian, Davis, & Amoroze, 2013; Carter, 2013; Haggerty, Sherrod, Garnezy, & Rutter, 1996) to positive psychology interventions in a changing school environment (Bird & Markle, 2012). Teachers' thoughts and opinions play an important role in such school programs (Henry, Farrell, Schoeny, Tolan, & Dymnicki, 2011). Their attitudes and beliefs have an impact on how school-based programs are implemented and student outcomes. Teachers' increased sense of responsibility in reporting behavioral problems helps decrease bad behavior among students (Henry et al., 2011). At the same time that the need to account for students' emotions in the learning and educational process has increased in the last few decades, it has also placed a greater burden on teachers to fully consider how to include fascinating content in classroom practices to better engage all students (Carolissen, 2012). Teachers are also required to recognize what kinds of social environments and activities support students' development, performance, and well-being (Ryan & Deci, 2000). The classroom climate and relationships play important roles since lower aggression levels among students is the result of a positive interpersonal climate, including more supportive student-student and student-teacher relationships (Henry et al., 2011). Student motivation is also influenced by the tasks and how teachers present them. Although given assignments enable students to complete the task in time, Bird and Markle (2012) propose that school curricula should include practices that permit students to select meaningful and realistic goals on their own. Since external tasks do not support autonomy, freely chosen goal setting both enhances students' well-being and improves their motivation. As with previous studies in the field, the present study has likewise implemented programs to improve students' well-being. Besides a focus on social skills, three interventions (EASE, ART, and

² Students felt that they had less discussions with parents, were lonely, or that they had no close friends.

MATH) provided students with opportunities to make their own decisions and experience a sense of autonomy. Additionally, the EASE intervention involved physical tasks in a different learning environment and horses as “fascinating partners” and co-supporters in given tasks.

Even with empirical research demonstrating that interventions benefit students’ well-being, this has been little progress in further implementing such interventions to support educational and social success. Thus, schools are encouraged to include essential SWB elements in the curricula, such as self-appreciation, fostering problem-solving skills and interpersonal skills, goal setting, and structured mentoring. Students perform better academically and other favorable aspects of their lives are generally enhanced when SWB is implemented in schools; SWB shares commonalities with Maslow’s self-actualization theory, which emphasizes the idea that “what a man can be, he must be” (Bird & Markle, 2012). According to Maslow (1943), cognitive capacities (learning, intellectual and perceptual qualities) also play an important role in basic needs satisfaction, as they are a set of adjustive tools. If they are not met, a deficiency in basic needs fulfillment occurs (Maslow, 1943). Despite the fact that Maslow’s hierarchy of needs has been widely criticized (Louca, Esmailnia, & Thoma, 2021; Heylighen, 1992), it is cited here for its importance to the field of motivational theories. Critics emphasize that the theory is not sufficiently scientific. Instead of having an adequate research design with scientific requirements, Maslow based his theory on observations that he made in everyday life situations (Heylighen, 1992). However, modern medicine may benefit from the self-actualization levels that Maslow describes in his theory. A patient’s quality of life can improve by progressing through Maslow’s development stages on the way to becoming a self-actualized person (Ventegodt, Merrick, & Andersen, 2003).

Learning is a social process (with teachers, peers, or supported by parents), and adolescents’ emotions either endorse or hinder it (Zins et al., 2007). Yet, schools with stronger norms concerning aggression seem to have less violence. At the same time, the impact of school norms is influenced by grade and gender. Henry et al. (2011) found that girls tend to obey school norms more, while the norms had no influence on the aggression level of 8th-grade boys. Despite a variety of adolescence programs, it is still difficult to motivate young people to engage with and actively participate in these programs (Stanton, Cole, Galbraith, Li, Pendleton, Cottrel, Marshall, Wu, & Kaljee, 2004; Slesnick, Meyers, Meade, & Segelken, 2000; Santisteban, Szapocznik, Perez-Vidal, Kurtines, Murray, & LaPerriere, 1996).

Zins et al. (2007) recommend that there is a need for additional teacher training to meet students’ well-being challenges. Besides the social-emotional skills taught to students in the intervention programs, educators could learn to control their own stress and be more skillful problem solvers in their own lives (Zins et al., 2007).

The teacher's role and competence at creating a safe learning environment is the key element for greater well-being in the classroom (Holfve-Sabel, 2014).

2.1 Basic needs fulfillment in school context

Personal competence is improved by positive emotions, diverse environments with multiple experiences, and inspiring settings for learning, where students' needs are considered and they can demonstrate their competence in different ways. Co-operational learning is supported by working methods that help students construct understanding and competence together with others. Furthermore, diverse artistic activities, a problem-centered approach, imagination, and play all reinforce methodological and conceptual competence and creative and critical thinking. (FNAE, 2016.)

Meeting basic needs, whether physical or psychological, are those energizing states that, depending on the level of satisfaction, either contribute to greater well-being and health or take away from them. Psychological satisfaction, autonomy, competence, and relatedness all need to simultaneously be met for an individual to have a strong sense of well-being (Ryan & Deci, 2000.) The energy needed to meet the demands of learning comes either directly or indirectly from satisfying these needs (Deci & Ryan, 2008).

According to Deci, Vallerand, Pelletier, and Ryan (1991), schools have a major socializing influence on students and the course of their lives, as well as on all of society. Desirable school communities are successful at stimulating a sincere interest in learning and a sense of achievement among students as well as a desire to voluntarily become involved in school society. These kinds of voluntary activities cause students to be more adaptable to such important elements as effective knowledge achievement and problem solving and developing a strong sense of personal worth and social responsibility. Students need to recognize the extent to which facts are interrelated and how facts are generated or learned, for ideal learning crucially includes conceptual understanding and flexibly applying knowledge. Social environments have a vital role in fostering intrinsic motivation. If they do not successfully satisfy basic psychological needs, it could lead to undesirable consequences for students: motivation could become more externally focused or even lost and a decline in the development process, leading to poorer performance. An optimal education, in contrast, makes students feel good about themselves, prompts them to engage in voluntary tasks to fulfill their own needs, and become attuned to and concerned about their social surroundings (Deci et al., 1991).

When the fulfilling of basic psychological needs also accounts for suitable social contexts, then the resulting developmental frames can stimulate an engaged and integrated learning process among students. In contrast, unnecessary control, unwanted tasks, and a lack of connectedness interrupt the natural intrinsic enforcement and structural tendencies supporting the learning process, leading to a lack

of responsibility and initiative (Ryan & Deci, 2000). Self-determined features coupled with achievement and learning are encouraged in those types of educational settings that allow students to have a role in the educational process and activities (Deci et al., 1991). Praising students when they succeed in self-initiated learning tasks promotes a sense of competence and intrinsic motivation. On the contrary, commending students for completing externally given tasks could decrease their intrinsic motivation and promote dependent extrinsic motivation (Ryan & Deci, 2000; Deci et al., 1991).

Schools include many procedures and activities that, however inadvertently, decrease students' intrinsic motivation (such as competitions, deadlines, and dictated goals). Many typical educational practices are merely controlling and prevent autonomous self-regulation. According to the motivational continuum of SDT theory, motivation varies from amotivation, to extrinsic motivation, to intrinsic motivation, depending on how an individual perceives of the task or activity (Ryan & Deci, 2000). Intrinsic motivation seemingly becomes weaker as students progress through primary school (Ryan & Deci, 2017; Ryan & Deci, 2000). Despite the fact that students may not be intrinsically motivated by the tasks provided by a school, they could still experience intrinsic motivation in other contexts or through other activities

Aside from schools being places where students are meant to learn, they are also places to foster students' development. Thus, instead of concentrating only on teaching subjects, schools should provide contexts that help develop students' citizenship and participation, engagement, social skills, motivation, and well-being (Ryan & Deci, 2017). Teachers' behavior, especially the extent to which they either support autonomy or are controlling, has an important effect on students' level of motivation and self-determination. Also, the more teachers seek to control students, the less likely that students will perform well (Ryan & Deci, 2017; Deci et al., 1991). Positive feedback given in a regulated manner is also controlling, and it decreases students' intrinsic motivation. A teacher's orientation influences the classroom climate. Some teachers enhance students' motivation, while others are more supportive of students' behavioral issues. Threatening students with punishment or promising rewards are widely used motivational strategies. Principally serving as behavioral controls, they decrease intrinsic motivation since they prevent students from internalizing the rules and regulations as norms. When students sense that they are being pressured and controlled to act, think, or perform in specific way, their level of motivation and internalization then declines. To express feedback in a motivating manner, teachers are required to identify with students' frames of reference (Deci et al., 1991).

Locus of control

Besides the fact that autonomy-supportive contexts improve students' intrinsic motivation, such contexts also cause students to feel they are in control of

achieving their desired goals through their own behaviors or actions (Ryan & Deci, 2017). Locus of control (LOC) is a personality attribute used in the social sciences (Nowicki, Iles-Caven, Kalechstein, & Golding, 2021). It reflects personal opinions regarding how much one is capable of controlling the incidents that take place around them (Galvin, Randel, Collins, & Johnson, 2018). Ajzen (2002) defines internal locus of control as being closely related to perceived behavioral control over consequences when an individual, through their own effort or abilities, affects outcomes. In contrast, external locus of control results from nonbehavioral factors (Ajzen, 2002).

Locus of control and coping with difficult situations are interrelated. Adolescents' internal locus of control, which is associated with coping in harmful situations, may well influence their positive mental health. In addition, internal locus of control assists a person with acting in a way that helps them avoid problematic situations (Kliwer, 1991). An individual with an internal locus of control believes that every outcome depends on her/his own actions (Flouri, 2006). However, an adolescent's gender also apparently impacts the internal locus of control. Girls with an internal locus of control avoid problematic situations more than girls with an external locus of control or boys with either an external or internal locus of control (Kliwer, 1991). Internal locus of control is an indicator of academic achievement, even after many years in school (Flouri, 2006). Besides academic achievement, internal locus of control is related to motivation as well (Wang, Kick, Fraser, & Burns, 1999; Nowicki & Strickland, 1973) and a sense of independence (Nowicki and Strickland, 1973). Individuals with an internal locus of control have faith in their own capacity to master situations, unlike those with an external locus of control, who believe that the life events happening to them are determined by others or uncontrollable factors (Wang et al., 1999).

External and internal loci of control are included in this study since they have been used as variables in earlier equine-assisted intervention studies with SEN students (Trotter, Chandler, Goodwin-Bond, & Casey, 2008; Ewing et al., 2007), who have exhibited an increase in their internal locus of control (MacDonald, 2004). In addition, locus of control is associated with achievement, so the present study sought to ascertain whether it would also be present among SEN students in such contexts.

2.2 Motivation

Motivation refers to actions and movements that energize students. An unmotivated individual, in contrast, is not inspired by the task at hand. Additionally, motivation has an essential role in regulating cognitive, social, and biological factors, meaning it is valued as a productive source. These positive motivational elements are significant for improving performance and well-being and provoking change (Ryan & Deci, 2000).

Motivation involves persistence, direction, energy and equifinality,³ being closely related with curiosity and the natural pursuit of activities, with intentions, with voluntary or directed behavior, and with actions (Ryan & Deci, 2000). When behavior is self-determined, it involves processes motivated by student choice, whereas if it is controlled, then the governing process involves obeying teacher directives (Deci et al., 1991). Motivation can be either internal, based on one's own interests and values, or subject to external pressure, activated by measures external to the self. The type of the motivation, whether internal or external, regulates and determines an individual's performance (Ryan & Deci, 2000).

Motivation, performance, and development are maximized in social environments that allow individuals to fulfill their basic psychological needs for competence, relatedness, and autonomy. Opportunities to satisfy any of these needs advance an individual's level of motivation. But then, satisfying the need for autonomy is essential for an individual to be a self-determined person instead of a controlled Person (Deci et al., 1991). Since individuals have dissimilar ways of experiencing environments, situations, and cultures, the social context will have diverse effects on the level of personal integration, energy, and self-motivation that lead to personal growth and motivation (Ryan & Deci, 2000).

Since extrinsically motivated behaviors seldom appeal to inner interests, they must be externally re-enforced. Students subject to external control, the needs and rewards must be equally valued or closely related. For that reason, internally motivated behaviors must be based on a sense of relatedness, experiences of connectedness and belongingness. In a school environment, students approve of classroom rules and values better if they feel that their teachers care for them. Therefore, greater internalization is connected with students being able to relate to educators (Ryan & Deci, 2000).

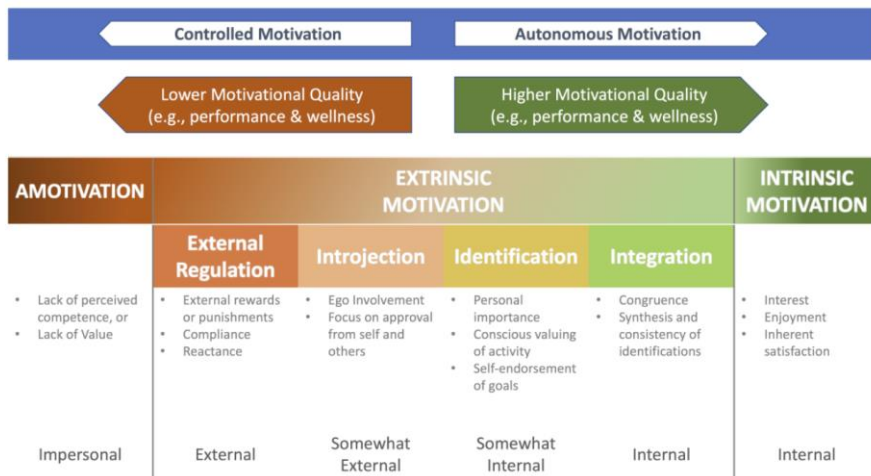
To actively perform actively an extrinsic task, an individual should experience efficacy, comprehend the task, and have suitable expertise in managing it. Internalized regulation could help students satisfy the human need for competence and relatedness. Supporting autonomy is essential for an individual's self-regulation and for having a sense of self-determination. Totally internalized regulation needs to satisfy the needs for competence, relatedness, and autonomy (Ryan & Deci, 2000). Notably, the foundation for students perceiving a supportive, encouraging, and accepting classroom climate is a school culture and teachers that support their autonomy. Reciprocal respect then occurs, and teachers are committed to responding to students' suggestions (Ryan & Deci, 2017).

Taxonomy of human motivation

Most motivation theories agree that the motivational dimension ranges from a total lack of motivation to being highly motivated. In addition, motivation also

³ Equifinality refers to alternative ways to reach the same target (Kruglanski, Pierro, & Sheveland, 2011).

varies by level and orientation. While the amount of motivation could remain the same (level), the reasons (orientation) for such actions may differ (Ryan & Deci, 2000). With respect to the motivational continuum (figure 2), amotivation is defined as extremely passive behavior, with no intention of taking part in an activity. The reasons for this passive behavior concern an individual's competence and attitude (Ryan & Deci, 2000) or tasks not based on an individual's self-determined choices (Deci & Ryan, 2002).



Adapted from Ryan, R. M., & Deci, E. L. (2000) American Psychologist; © 2017 Center for Self-Determination Theory

Figure 2

A Taxonomy of human motivation (Ryan & Deci, 2000; reprinted with authors' permission).

If behavior is controlled by external incentives or demands, it is called external regulation. Introjected regulation is the next stage toward less extrinsic motivation; it is based on an individual's inner demands, which regulate his/her behavior by causing feelings of guilt or anxiety. Moreover, introjection also concerns ego involvement, as an individual senses that performing certain acts could improve her/his self-esteem and self-worth (Ryan & Deci, 2000).

Identification is a more autonomous form of external motivation, referring to instances when an individual understands the personal importance of his/her own behavior. With such an understanding, individuals perceive behavioral regulations as being their own. Individuals' extrinsically motivated behavior leads to greater feelings of self-determination, causing them to internalize the justifications for their actions and understand their value. Through this internalization process, an individual comes to accept regulations or values precisely because they benefit that individual. After this step, the regulations are individually integrated, complementing feelings that they emerged through one's own will and desire. This kind of motivation is similar to intrinsic motivation, but since the reasons for one's

actions are instrumental, that is, emanating from outside oneself with respect to outcome, the original motivation is still external. Integrated regulation is the most autonomous form of external motivation. In this process, an individual totally comprehends the identified regulations, transferring and uniting them with one's own needs and values through self-reflection (Ryan & Deci, 2017, 2000).

Integration and internalization are essential in children's socialization process. In addition, they are significant for regulating behavior throughout one's lifespan (Ryan & Deci, 2000). Despite the fact that internalization develops throughout an individual's lifespan, the process does not occur along a developmental continuum. Any stage of regulation could be adopted at any point along this continuum. Likewise, an individual does not need to process each stage since progress depends on situational factors and an individual's former experiences. External and internal motivations may be transposed depending on situational and reward factors. One could begin a task based on external regulation, but with an uncontrolled reward one's internally driven interest in the activity could lead an individual to experience intrinsic motivational features. Just as easily, an activity stimulating an inner interest based on one's values could change and become based more on external regulation if there is a controlling instructor. Despite the fact that such movements from one motivational orientation to another can be predicted, they do not necessarily have successful outcomes. Instead, they give rise to developmental concerns. Improved cognitive and character capacities increase the values and behaviors that individuals assimilate within themselves (Ryan & Deci, 2000).

The processes are part of the motivational continuum. Through this type of motivational taxonomy, an individual's interests and behaviors range from a total lack of motivation (known as amotivation) to more active personal dedication to activities. Besides increased internalization, this level of dedication generates more positive self-perceptions, greater engagement, and increased persistence (Ryan & Deci, 2000).

2.2.1 Intrinsic motivation

Intrinsic motivation requires the fulfilling of basic psychological needs. If this is ignored, then students' intrinsic motivation may well decrease. For example, even if feedback is positive, a student's feeling of competence will not increase if the feedback is not connected with the activity that the individual is performing. When students feel like they have more control, then they also exhibit greater self-determination for engaging with the schoolwork, so they are more likely to stay in school than those students with less self-determined motivation. Activities that motivate individuals intrinsically satisfy basic psychological needs (relatedness, autonomy, and competence) (Ryan & Deci, 2000). Autonomy, whether experienced as having options or adopting a closely related person's choices, is an important element of engagement and intrinsic motivation (Ryan & Deci, 2017).

Intrinsically motivated behaviors help engage students, meaning they do not need another stimulus (Deci et al., 1991). Intrinsic motivation also occurs through the relationship between activities and individuals, as some activities are more attractive and engaging than others, and not anyone is intrinsically motivated to actively pursue all tasks (Ryan & Deci, 2000). All people are born with an inherent desire to play, be curious, explore, and learn. This kind of innate motivation, which increases an individual's skills and knowledge, is needed for human social, physical, and cognitive development (Ryan & Deci, 2000).

Environmental and social circumstances could either promote or hinder intrinsic motivation. Environments that actualize a sense of competence and support autonomy facilitate intrinsic motivation. In addition to these two basic psychological needs, individuals' inner interest in engaging with tasks also helps maintain a level of intrinsic motivation, including, for example, innovativeness, responding to challenges, and creative values. Intrinsic motivation can be improved through interpersonal structures and interaction if the tasks provide an optimum challenge and feedback that promotes effectiveness and avoid demeaning assessments. All are factors that fulfill an individual's basic psychological needs and stimulate feelings of competence, thereby facilitating intrinsic motivation. Intrinsic motivation is not enhanced without a sense of autonomy and meaning, both of which individuals need to experience a sense of self-determined behavior. Despite the fact that intrinsic motivation could also be realized without relational or social support, relatedness and a sense of security ensure that an individual's intrinsic motivation will flourish (Ryan & Deci, 2000).

2.2.2 Extrinsic motivation

School teachers must deal with students' engagement with and interest in given assignments on a daily basis. According to Ryan and Deci (2000), students with extrinsic motivation may exhibit diverse types of behavior depending on how they view a given task. Typically, extrinsic motivation occurs when students are forced to complete undesirable tasks. Another example of extrinsic motivation is when students accept that the task or its value will benefit them. The older the student, the greater the chance tasks and activities will be completed despite not being based on the student's own interests. Unlike some other motivational psychologists, Ryan and Deci (2000) introduce divergent motivation types and their relation to autonomy or self-determination. Since students are not always interested in the assignments provided by teachers, managing students' extrinsic level of motivation plays an essential role in efficient teaching. Extrinsic motivation is implemented through activities performed only for external reasons, such as their instrumental value or consequences. It can range from more exhaustive elements and to more attractive patterns of behavior (Ryan & Deci, 2000).

Ryan and Connell (1989) indicated in their study of elementary school students that different types of external motivation are associated with students' level of adjustment and mindset. The more students are guided by external regulation, the lower their level of effort and interest and the less they value the activity. The greater the extrinsic control, the more such students will criticize the teacher and other students for their own unfavorable results. Introjected regulation is positively related with improved effort, but it is also related to less of an ability to cope with failures and anxiety. When students have identified regulation, they enjoy school more and exhibit positive patterns for coping with failures. Intrinsic motivation is related to positive coping, a sense of competence, enjoyment, and interest. Furthermore, autonomous extrinsic motivation has positive outcomes both for learning and psychological well-being (Ryan & Deci, 2000). Thus, teachers should notice different forms of extrinsic motivation since many tasks are not interesting for all students. Effective teaching requires knowledge about how to endorse students' performance and energize them to engage with the material.

2.3 Autonomy

Being able to choose and decide on learning activities based on one's age level plays an important role in motivation. Therefore, autonomy is critical for more integrated regulation (Ryan & Deci, 2017), and it has a positive relationship with psychological health and improved behavior (Deci & Ryan, 2008). The term autonomy refers to being self-initiating and to self-regulating one's own actions. Autonomy is closely related to self-determination in this respect, meaning that one has the chance to take the initiative from a behavioral standpoint and have a greater chance to exhibit personal responsibility. Both develop in situations where students feel a closeness and sense of relatedness to an important adult. Supportive teachers will adopt specific practices that encourage positive performance. They take students' frame of reference into account (Ryan & Deci, 2017) and identify with their cognitive level and motivational state as starting points. Teachers offer choices, minimize control, identify with students' feelings, and make essential information available for students to decide how best to complete tasks. These procedures construct learning environments based on conceptual understanding, personal adaptation, social responsibility, and flexible problem solving (Deci, Vallerand, Pelletier, & Ryan, 1991).

To enhance students' initiative, relatedness, and autonomy, it is essential to understand the supportive procedures shaping the interactions between students and teachers. A teacher's interaction and performance impacts student outcomes. Controlling practices are connected to external incidents and regulations that decrease intrinsic motivation (Deci & Ryan 2008). Teachers who feel overly controlled and pressured by other teachers, government agencies, parents, or school administrators also exert more control over their students (Deci et al., 1991).

Compared to methods that aim to steer behavior by reward and punishment, the results are not so readily evident, but change will occur in the long run. Teachers and students influence each other. If students are inactive or unfocused, then teachers exert more controlling practices. Furthermore, those teachers who believe that students are externally motivated will exhibit more controlling practices in the classroom compared to those teachers who feel that their students have an intrinsic motivation to learn (Deci & al., 1991). Even though SDT theory provides a strategy for increasing students' performance and level of engagement, as well as positive feelings about learning, it is not used in all schools or by all teachers. Further, if students feel overly controlled at school, their learning in turn declines, predicting disengagement and even the possibility of dropping out of school. SDT supports students' autonomy by offering a psychological context to improve their intrinsic motivation. When a school supports autonomy, students tend more to persevere and be self-motivated, which enhances the quality of learning in the classroom (Ryan & Deci, 2017).

Moreover, when teachers feel the need to put more pressure on students to achieve better outcomes, they at the same time exert more control over their students. Instead of working to improve students' personal growth and conceptual understanding, this type of teacher behavior in fact reduces them (Deci et al., 1991). Assor et al. (2002) have underlined how children and adolescents benefit from autonomy-supportive and empathic teachers. Further, the three actions (autonomy, competence, and relatedness) supported by teachers need to be present at the same time to enhance students' intrinsic motivation. Likewise, a supportive school environment could enable it without other autonomy-supportive behaviors. Furthermore, those educators who guide students to improve and recognize each student's individual objectives and ambitions without interfering in how they realize these goals will instill positive feelings. In contrast, negative emotions will result if teachers interfere with students' own goals.

Specific behaviors by teachers enhance autonomy. First, a positive learning attitude will result if teachers explain how the learning task is relevant to students' own values and interests. Second, students' autonomy in learning will improve if teachers provide a choice of tasks to select. Third, teachers who encourage independent thinking with criticism make learning more interesting for students (Assor et al., 2002).

Like with SDT, basic psychological needs are similar among SEN students and less so with respect to other students. Therefore, any intervention that is designed to support these students' behavior or learning needs to respect students' autonomy (Ryan & Deci, 2017). Thus, the interventions in this study offered students an opportunity to make choices about whether to participate, but also to remain as an observer.

2.4 Relatedness

Relatedness refers to an individual's need to experience a sense of belonging and be connected to other people (Skinner & Edge, 2002), as well as to their desire to develop safe and meaningful connections with others in their social milieu (Deci et al., 1991; Ryan & Deci, 2017). As such, relatedness is a fundamental psychological need that involves individuals both attentively and responsively in important interactions with their social and physical environments (Ager, 2013; Battistich, Solomon, Watson, & Schaps, 1997). This adaptive system directs their attention, behavior, and emotions (Skinner & Edge, 2002). Despite this, researchers have found that many adolescents are disengaged from their school community (Henry, Farrell, Schoeny, Tolan, & Dymnicki, 2011). According to results from Finland, a sense of belonging decreases among Finnish students as they mature (Halme et al., 2018). However, an American study that compared schools based on students' perceived relatedness found that academic outcomes and psychological well-being improve in schools that support a sense of belonging (Anderman, 2002). According to Ager (2013), supportive and caring schools have common elements. They involve parents and create programs that facilitate the expression of emotions. In addition, they utilize peer and adult mentorship and develop social competence learning programs. These programs

encourage class room participation, increase access to academically challenging programs, integrate reflection sessions into curriculum, train teachers to be emotionally supportive, provide remedial care, provide programs for special education, encourage personalized learning, encourage close teacher-student relationships, develop cultural competency in staff; educators should help students to become aware of the culture of power and guide them through the strategies, conventions, and knowledge necessary for success; implement school-level reforms (e.g. school restructuring, reorganization) and district-level reforms (e.g. distribution of students across schools); provide resources, institutionalize supports, or structure access to mitigate constraint and reduce risk. (Ager, 2013, p. 491)

Battistich et al. (1997) define community as a place where members actively influence decisions and activities, where they care for and support each other, and where they feel a sense of belonging and share values, goals, and norms. They also argue that not only mainstream or vulnerable students, but all students, benefit when schools emphasize support and caring community practices. Furthermore, students' psychological needs are met if they have the possibility to participate actively in a caring group.

In this study, all three interventions (EASE, ART, and MATH) supported students' efforts at relating to the group. The ART and MATH Intervention sessions began with a collective discussion and studying daily tasks, before progressing to

working in pairs or a group. Each session of the EASE intervention began with roll call, followed by collective physical exercise. At the end of each session, all students were asked to share their feelings and experiences as well as their desires for the next session. In addition, the study focused on loneliness as one measured variable, such as if there was a change in a student's feelings concerning loneliness when measuring the outcomes of the intervention.

2.5 Competence

A sense of competence is a major component of various motivation theories, but it does not meet the precondition for initiative, integration, and motivation (Deci et al., 1991). A sense of competence relates to an individual's basic need to feel a sense of mastery and enhanced capacity. Furthermore, individuals feel a need to perform effectively within the appropriate context (Ryan & Deci, 2017). According to Ryan (1982), when sense of competence is endorsed, for example by giving positive feedback, it increases students' intrinsic motivation only if provided in a way that supports autonomy.

Despite a sense of competence being highly valued in human development, experts cannot agree on a precise definition for the concept (Stoof, Martens, van Merriënboer, & Bastiaens, 2002; Mirabile, 1997). A sense of competence differs from competence as such, which involves knowledge, skills, abilities, or characteristics associated with a high level of performance as well as values, motives, and beliefs (Mirabile, 1997). It also refers to a need to experience oneself as being effective in one's interactions with the social and physical environments (Skinner & Edge, 2002), understanding how to achieve various external and internal results, and performing the required action efficiently (Deci et al., 1991).

Social and emotional competence

Considering the demands placed on students throughout their time in school, it is essential for schools to adopt programs that endorse and assist students' emotional and social growth (January, Casey, & Paulson, 2011; Haggerty, Sherrod, Garmezy, & Rutter, 1996). Moreover, children need essential social and behavioral skills in their repertoire to be successful. Thus, schools are important settings for teaching social skills and competencies and for preventing undesirable behavior (Haggerty et al., 1996.) Grosche and Volpe (2013) as well as Cherniss, Extein, Goleman, and Weissberg (2006) suggest that schools should implement interventions that teach emotional competence. These types of programs can strengthen healthy development and positive academic outcomes (Cherniss et al., 2006). The capacity to recognize and understand their emotional expressions gives students knowledge about how their behavior can affect others (Gundersen, 2010). Improved social and emotional competence can significantly change students' behavior (Skinner, Furrer, Marchand, & Kindermann, 2008). In addition, a child's

age influences her/his social competence, since social responsibility, peer relationships, and self-regulatory processes are significantly related to grades (Wentzel, 2003).

Social competence involves the capacity to combine cognition, affect, and behaviors to achieve specific social objectives and positive outcomes. Social competence comprises core skills, attitudes, capacities, and feelings; the practical purpose of such competence is determined by situational context, culture, or environment (Haggerty et al., 1996). Cherniss et al. (2006) have underlined how core emotional abilities support the way students perceive and manage their emotions as well as interpret their own emotions and those of others. These core abilities construct social and emotional competencies (Cherniss et al. 2006). Seligman et al. (2009) encourage schools to teach both academic skills and other skills for the promotion of well-being. Consequently, they find well-being synergistic with better learning since better well-being also enhances learning. Additionally, they identify three crucial arguments for the importance of well-being in education. First, it serves as medicine to avoid depression. Second, it enhances life satisfaction. Third, it improves learning and creative thinking. Like any other intervention program, well-being programs must be evidence-based programs (Seligman et al., 2009). Furthermore, an ecological perspective provides two explanations for students' classroom-specific behavior. Students engage in socially acceptable performances when they value the goals to be achieved just as much as their teachers and classmates do. Also, these goals must be realized via sanctioned means and provide positive outcomes for all students (Wentzel, 2003).

Prior research has focused on the connection between social skills, academic achievement, and behavior problems (McClelland, Morrison, & Holmes, 2000; Osofsky & Osofsky, 2000; Segrin & Flora, 2000; Wentzel 1991). Since social competence and academic achievement are related (Moore, Cooper, Domitrovich, Morgan, Cleveland, Shah, Jacobson, & Greenberg, 2015; Moore, Rhoades Cooper, Domitrovich, Morgan, Cleveland, Shah, Jacobson, & Greenberg, 2015; Tian, Zhao, & Huebner, 2015; January et al., 2011; Cherniss et al., 2006), socially competent students easily engage with strategies for more effective interaction (Joseph & Strain, 2003). In contrast, feelings of rejection and loneliness can lead to destructive and aggressive behavior, as weak social skills constitute a risk factor for other problems (January et al., 2011).

Recent research results have demonstrated that requisite social skills improve children's well-being, often leading to a significant increase in school-based social competence programs (Haggerty et al., 1996). Intervention practitioners should understand the underlying factors of chronically aggressive behavior in order to prevent such behavior in the future (Larson & Lochman, 2002). Effective intervention programs thus support students' individual abilities and teach them social competence, problem-solving skills and techniques, decision-making procedures, social-emotional and coding skills, and communication skills (Haggerty et al.,

1996). Hence, programs supporting social and emotional skills have positive outcomes. Improvements are made when parents and other role models become more engaged in school activities and when teachers learn how to better support the socio-emotional skills of students. Each of these improvements also promotes students' resilience in the face of adversity (Ager, 2013).

Though there is a clear need to support students' social and emotional skills in order to prevent other problems (Banerjee et al., 2014; Anderson-Butcher, Iachini, Riley, Wade-Mdivanian, Davis, & Amorose, 2013; Haggerty et al., 1996), not all teachers feel comfortable with and competent at teaching social and emotional skills (Collie, Shapka, Perry, & Martin, 2015) or with being responsible for students' well-being (Edling & Frelin, 2013).

2.6 Engagement and coping

Schools aim to improve students' cognitive learning, but also to provide a context for their development, including engagement, motivation, and pro-social well-being. Self-regulation and engagement, capacities that are improved by performing SDT (autonomy, sense of competence, and relatedness), are expected to be more useful in students' later life than any explicit fact learned. When schoolwork is performed on the basis of SDT principles and basic psychological needs are satisfied, students as well as teachers are more engaged and motivated (Ryan & Deci, 2017).

Engagement

Student engagement has three dimensions depending on the context where it is identified. Students' fulfillment of basic psychological needs influences their degree of engagement or disengagement at school (Ryan & Deci, 2017; Battistich et al., 1997; Deci et al., 1991). Notably, teachers' orientation, whether they support greater student autonomy or are more controlling, significantly influences the learning climate in classrooms and how well students adjust to school as well as their motivation, learning, and engagement. To better support students' autonomy, teachers need their own professional autonomy in teaching (Ryan & Deci, 2017).

A warm and friendly school ethos with positive interactions between members of the school society are meaningful for students' actions and learning. Thus, the specific social environment affects students' connectedness and engagement at school since social milieu in general influences the quality of performance and has an impact on students' experiences of competence, relatedness, and autonomy. In contrast, motivation decreases if the social context prevents students from fulfilling the three basic psychological needs of autonomy, relatedness, and competence (Deci et al., 1991.)

Unlike extrinsic motivation, with its material rewards or constraints, intrinsically motivated behaviors are engaging in their own right. They provide

enjoyment and delight, which result from the performance itself. This fully voluntary type of performance represents the prototype of self-determination since it is endorsed by and radiates from the self (Deci et al., 1991). Making education a valuable experience requires internalization, meaning that individuals adopt particular values or regulations (Ryan & Deci, 2000). When students value learning and academic outcomes, they become more engaged in education. Even with uninteresting topics and activities, students still become engaged if they are provided with sense of autonomy to accept the offered educational values as their own. In addition, internalization and integration result from fulfilling basic psychological needs (Deci et al., 1991).

Coping

As life is unpredictable, children can often not be spared a certain amount of misfortune and troubles (Rutter, 1987). Risk factors are defined as personal characteristics or environmental conditions that enhance the possibility for negative outcomes or else involve conditions and variables that will more likely create stress or problems for individuals in general but not for a randomly selected individual from the general population. In other words, the risk is for the most part only statistical and concerns groups rather than being applied to individual children (Cole & Cole, 2000). Teachers can improve students' coping skills and engagement by establishing a classroom context that fulfills their basic psychological needs (Skinner & Edge, 2002).

Risk and protective factors should be considered every time that prevention programs are created (Taylor et al., 2017; Arthur et al., 2002), since they influence a student's coping skills (Taylor et al., 2017; Jessor, 1993). Risk factors could be reduced by changing the threat or meaning of a risk variable or by altering that child's involvement in a risky situation. Instead of focusing on factors that produce good feelings, attention must be devoted to those procedures that minimize risk. The mechanism or process influences students to the extent that such variables increase risk or vulnerability since they determine the outcomes (Rutter, 1987). Thus, the three interventions conducted in this study created conditions that reduce students' risk factors. Since poor relations with one's peer group pose a risk for children, this study involves interventions performed in pairs or groups. The purpose is to improve relations between students when they are made to learn together. At the same time, the setup is based on the idea that they will learn more about each other as well as from each other.

Depending on the characteristics of community, family, or child, risk and protective factors can be divided into three sections (Rutter, 1987). An exosystem⁴ provides a framework consisting of events that influence a person's development,

⁴ According to Bronfenbrenner's theory (1977), an exosystem involves social elements that, instead of a direct impact, have an indirect influence on the developing person (for example, institutions, mass media, and the neighborhood area).

even when that person does not actively participate (Bronfenbrenner, 1979). It is linked with children's risks of being exposed to community violence, neighborhood crime, and social isolation, all of which impoverish a community, meaning they reduce community resources and community services. The macrosystem⁵ includes items related to children's risk factors, such as cultural violence, parenting customs, racism, social acceptance of violence, and economic recession. In addition, children can also be exposed to risk in their microsystem. These risks include domestic violence, financial hardship, chronic unemployment and stress conditions, a hostile family environment, intergenerational abuse, parental psychopathology, maladaptive child-rearing skills, job loss, divorce, and daily hassles (Cole & Cole, 2000). Family disharmony is presumably a risk factor as well. Loss of a parent, especially early maternal loss, which can lead to a lack of affectionate care, is a predictive risk (Rutter, 1987), as well as biological and genetics risk factors like alcoholism in a family (Jessor, 1993).

Social environments are considered risk factors if students experience poverty, racial inequality, a lack of norms, and illegal activities. Every model for deviant behavior, including conflicts between parents or between friends, produces risk since adolescents are influenced by the environmental incidents that they witness (Jessor, 1993). Some children are more vulnerable to risk based on their personalities, such as having a challenging temperament, physiological deregulation, narrow cognitive competence, troubled attachment, low self-esteem, poor relations with their peer group, school problems, psychopathology, physical illness, momentary stressors, and failures in tasks (Cole & Cole, 2000). An adolescent's own behavior patterns can pose a risk to their development and growth. These kinds of risk behaviors and problematic lifestyles include misbehavior and drug use, eating disorders, smoking, passivity with respect to sports and exercise, and unsuitable school behavior characterized by a desire to drop out or cut school. Children are at risk if they have low self-esteem, risk-taking tendencies, negative view of the future, or perceive that they have few chances in life (Jessor, 1993).

Scholars have offered several explanations for how self-efficacy and task accomplishment act as protective variables. Some suggest that self-efficacy intervenes as a protective mechanism when an individual's previous successful coping experiences predict future success in difficult situations. On the other hand, protective variables depend on self-esteem, which is based on positive interpersonal assessment. In addition, a child's specific skills presumably provide protection against engaging in risk behaviors (Rutter, 1987). Using a meta-analysis of school-based emotional learning interventions, Taylor et al. (2017) concluded that

⁵ According to Bronfenbrenner (1977), a macrosystem includes those universal fundamentals that are present in the culture or subculture through concrete activities (for example, classroom activities are similar despite the school).

such programs have dual benefits for students since the interventions influence both negative and positive indicators of well-being. They discovered that intervention programs influence positive attitudes, social and emotional skills, and academic achievement. Furthermore, the interventions seemingly provide protective attributes (Taylor et al., 2017).

Accordingly, protective and risk factors provide an explanation for why some individuals seem to have higher self-esteem, despite facing numerous difficulties in life, while others lose hope and give up. Instead sheltering children or dismissing their problems, children should be protected by preparing them to encounter various unpleasant incidents or stressful situations. For instance, schools with good academic programs and observant and alert personnel provide support for children from disadvantages families (Rutter, 1987). The importance of an individual’s self-concept and how students generally feel about their social milieu and their ability to cope with various life struggles is key to school performance (Rutter, 1987; Taylor, et al., 2017). Gender also affects how young people cope with risk. Being female is seemingly a protective factor, as girls are less exposed to risks overall and tend to handle family matters better than boys (Rutter, 1987). Though family is the main support system for children (Cole & Cole, 2000), children with detrimental temperaments deal less well with criticism, are more prone to hostility, and are punished more by their parents. Furthermore, children with challenging temperaments are more likely scapegoats in the family (Rutter, 1987).

Instead of directing attention at protective factors, it is important to focus on those mechanisms that help individuals cope with stressful situations. Therefore, rather than concentrating on risk or protective factors, Skinner and Edge (2002) describe how risk or protective contexts influence an individual’s sense of having had their basic psychological needs met (relatedness, autonomy, and competence). This model illustrates how constructive methods help individuals manage in difficult situations, leading to better coping skills and engagement, which are essential for successful adaptation and development. Further, coping and engagement affect an individual’s social, cognitive, and personality development (figure 3).

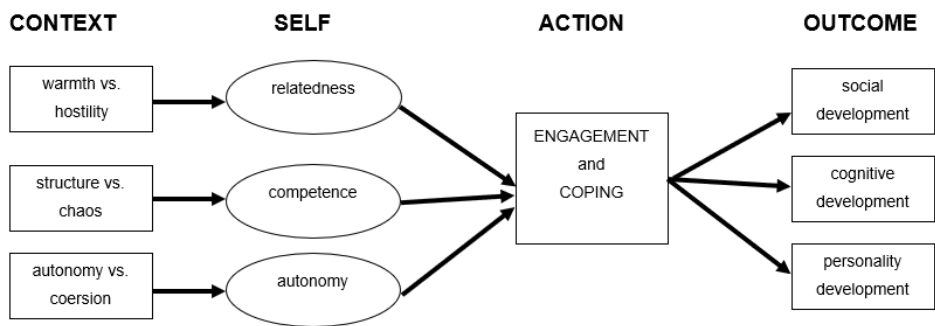


Figure 3
Frames for intervention followed the Motivational Model of Context, Self, Action, and Outcomes (Skinner & Edge, 2002; reprinted with author’s permission).

However, this model is not limited just to the school context since it provides a measure of predictability on how to satisfy basic psychological needs in children's own surroundings, making it suitable in a broader context as well. The model responds to questions of how to fulfill fundamental psychological needs when individuals' internal processes are organized around autonomy, relatedness, and competence as a result of experiences. The model describes how an individual's social, cognitive, and personality development could be improved by receiving support in social contexts. "Patterns of action" are fundamental to this model. Constant engagement is a consequence of motivational processes as persons intentionally interact with their social and physical environment. The interaction also includes positive, repeated, and goal-directed elements (Skinner & Edge, 2002).

Interpersonal skills are essential in protective processes (Taylor et al., 2017; Rutter, 1987), and it is important that adults provide a measure of safety to ensure children's protection. Accordingly, a child can be protected from family disharmony if he or she has at least one secure relationship with an adult. Some protective factors can be provided in settings that most directly impact children, like a harmonious parent-child relationship and parents' ability to raise children in a positive family atmosphere that provides them with a sense of security (Rutter, 1987). Peer group and school provide protective factors as well if children have positive relations with their peers and teacher, are well-adapted to school (Cole & Cole, 2000) and experience positive school outcomes (Rutter, 1987). In addition, schools with adults who are interested in children, who support children and their engagement in school activities (Jessor, 1993), or who valuing achievement (Taylor et al., 2017; Cole & Cole, 2000) can also positively impact the interpersonal skills of a child. Similarly, Skinner and Edge (2002) suggest in their model that a warm and welcoming environment serves as a protective context contributing to a sense of relatedness. Further, individuals with loving relations adjust better to stressful situations compared with those who are lonely or have conflicts with others. A sense of social support and control are important factors in an individual's ability to cope. When people feel that they have control and are competent, they remain optimistic and are more likely view possibly harmful situations as tests that challenge their problem-solving skills (Skinner & Edge, 2002).

Since social support and good social relations are important for coping, students' relations with their parents and peer group can be measured using the ASEBA instrument, whereas a sense of loneliness has its own instrument in this study. Further, all three interventions discussed in this study provided students with an opportunity to support others in given tasks by having them work together as pairs or in groups. Additionally, the activities used in the EASE intervention required teamwork in order to successfully complete the given tasks.

Children might also possess qualities and characteristics that serve as protective factors, including good physical health (Jessor, 1993), high intelligence (Cole & Cole, 2000; Jessor, 1993), high self-esteem, an easygoing temperament, a

strong adaptive affect and good physiological regulation, as well as protected attachments (Cole & Cole, 2000). According to Rutter (1987), protective factors are actualized when an individual has a strong sense of self-worth combined with confidence and a belief that successful coping is possible in troubling situations. An individual's self-concept is developed through loveable and harmonious relationships and by completing meaningful tasks. Besides enjoying success in exams and other school-related tasks, such individuals also demonstrate responsibility in endeavors related to both non-academic and social success (Rutter, 1987). The protective context in the motivational model (Skinner & Edge, 2002), which supports student confidence, suggests that structure offers predictability. When individuals can predict the next activity, it is easier for them to join in and be engaged with activities.

Skinner and Edge (2002) demonstrate in their model, as was noted earlier, how autonomy and the need to support it are essential for engagement. Many studies reveal that students are more competent and motivated to engage in learning when their parents and teachers support their basic psychological needs by providing autonomy and structure. Besides psychological well-being, these types of motivational experiences predict greater and deeper engagement with learning (Ryan & Deci, 2017). When structure is compared to "chaos," instead of being controlling, structure offers a form of predictability that enables students to pursue autonomous actions.

Since this study examines the well-being of SEN students, risk and protective factors as socio-cultural contexts are also considered. SEN students face a variety of issues that could cause them to be at-risk students. Often, more than one contributing factor makes them vulnerable to being at risk, including factors related specifically to the student (like deviant behavior, explosive temperament, learning difficulties) and factors related to, for example, the students' environment, social interactions, or family (Cole & Cole, 2000). In addition to exhibiting competence at completing tasks, social competence plays an essential role in supporting children. If the focus is on students' well-being, then social-emotional skills predict more long-term effects than just students' positive attitudes.

Social competence enhances students' behavior and academic achievements since it involves both interpersonal and intrapersonal skills, including problem-solving, self-regulating and relationship skills (Taylor, et al., 2017). According to Rutter (1987), protection is actualized when an individual has positive self-worth combined with confidence and a belief that successful coping is possible in troubled situations. Based on the motivational model, this study includes interventions that promote students' engagement with constructive and repeated activities involving flexible choices in diverse social and physical surroundings. Furthermore, each intervention session follows a similar structure, providing predictability to support students' autonomy and improving their sense of competence. Moreover,

parents were also involved in the EASE intervention: we invited them to the last session to witness what their children had learned.

Resilience

Despite setbacks or stressful experiences, some individuals seem to have better outcomes than others (Rutter, 2012; Cole & Cole, 2000). This may be the result of resilience, an individual ability that is defined as the tendency to “to spring back,” “to rebound,” or “the power of recovery” (Garmezy, 1991). Therefore, it is essential to recognize the influence of protective factors on a person’s life course and development. Therefore, these processes constitute factors that resist risk when an individual’s life course shifts from risk to adaptation. Protective factors closely resemble resilience, meaning how individuals react to difficulties and stress. The first mechanism aims to reduce the impact of risk. Second, the chance of a negative chain reaction decreases. The third mechanism involves self-efficacy and self-esteem, both of which must be established and maintained. The fourth mechanism provides for a better future by suggesting new opportunities (Rutter, 1987). When referring to the motivational model (Skinner & Edge, 2002), resilience can be viewed as one of the developmental outcomes when an individual’s basic psychological needs are satisfied, with the individual then exhibiting successful coping skills in difficult situations.

Ungar and Liebenberg (2011) emphasize that resilience is a potentiate positive development achieved through qualities possessed by the individual and stemming from the individual’s environment. It is also defined as positive adaptative behaviors that emerge during or after encountering significant difficulties or a risky situation (Masten, Cutuli, Herbers, & Reed, 2009), or as the competence and capacity to successfully adapt despite facing difficult or threatening conditions (Masten et al., 1990). Resilience also provides one with the means to overcome stress and decrease her/his vulnerability despite the presence of risk (Rutter, 2006) or adapt his/her life skills to meet varied environmental situations and settings (Haggerty et al., 1996).

Resilience includes elements of psychological, physical, and social well-being. Caprara and Rutter (1995) claim that resilience has been misunderstood in two fundamental ways. It does not result from the positive experiences in an individual’s life. Rather, resilience and resistance improve when people are forced to cope with distressing incidents (Caprara & Rutter, 1995). Therefore, earlier risk experiences have reinforcing effects for particular people. In addition, when such resilient individuals encounter stressful situations in the future, they are able to cope well with decent psychological outcomes (Rutter, 2006).

Resilience is promoted by several factors: an easygoing temperament, a good internal locus of control, and higher self-esteem. Each of these factors helps individuals cope better in stressful situations. Also, higher intelligence, and a sense of humor help people manage difficult situations. Loving support and clear

boundaries are also protective factors that improve one's resilience. Elements contributing to positive opportunities include self-confidence and self-esteem, self-efficacy, and a sense of mastery, ranging from positively overcoming tasks, to good social skills, to empathy for others (Masten et al., 1990). Whereas resilient people use humor in stressful situations, many less resilient persons often avoid social contact and have a reduced ability to feel pleasure (Music, 2011). Despite individual aspects of resilience, ultimately the notion of resilience refers to a community's capacity to offer needed resources in culturally meaningful ways (Ungar, Brown, Liebenberg, Cheung, & Levine, 2008). Resilience has social components as well, like belonging to social groups, where individuals learn to be sociable and outgoing. Therefore, active membership in social networks and a sense of group identity enhance students' health outcomes (Music, 2011).

Resilience is increased by engaging in activities that inspire hope and positive actions (Music, 2011). Hence, researchers, clinicians, and policy makers have emphasized the importance of resilience instead of risk, improving positive factors in place of maladaptive performance (Rutter, 2012; Music, 2011). However, resilience is not the same as positive psychology or competence, nor does it comprise its own theory (Rutter, 2012). Some studies concerning best practices to protect children in crisis mention resilience as one factor in intervention programs (Ager, 2013). Programs that emphasize social and emotional skills with positive outcomes often promote students' resilience by engaging parents and other role models in school activities and guiding teachers in how to assist their students in developing their socio-emotional skills (Ager, 2013). Intervention programs that support students' personal abilities are also effective at improving their resilience (Haggerty et al., 1996). Burgon (2011) suggests that preventative equine-assisted activities can be therapeutic, educational, and rewarding for adolescents and promote resilience.

While this study only measures resilience indirectly, since it is closely related to well-being, especially coping in stressful situations, the intervention activities included certain elements designed to enhance resilience. Furthermore, the EASE intervention involved problem-solving skills and teamwork in various environments.

3 Animals and human well-being

This chapter presents an outline of how animals, including horses, could be engaged with human health and well-being. First, it focuses on the global history and development of equine-assisted programs. This is followed by describing the benefits as well as the challenges and limitations of using horses. Finally, three Finnish approaches to equine-assisted programs are introduced.

Animals have traditionally been an important part of human life (O'Haire, 2010; All, Loving, & Crane, 1999), having long been viewed as pets or companions (Staats, Sears, & Pierfelice, 2006). A companion animal possesses attributes that are good for human well-being (Wood, Giles-Corti, & Bulsara, 2005; Barker, Rogers, Turner, Karpf, & Suthers-McCabe, 2003; Beck & Meyers, 1996). Empirical studies indicate that a companion animal tends to decrease stress levels (Jalongo, Astorino, & Bomboy, 2004), and experts have noted the role played by animals as supporters of human health (Lentini & Knox, 2015; All et al., 1999; Beck & Meyers, 1996).

Pet ownership contributes to positive psychosocial factors, and it also reduces the risk for heart disease and has a positive impact on people recovering from a severe illness (Beck & Meyers, 1996; Friedmann, Katcher, Lynch, & Messent, 1980). The mere act of petting a dog can lower a person's blood pressure and improve coronary survival rates (Friedmann et al., 1980). Experts suggest that the enhanced social interaction provided by companion animals is related to improved cardiovascular health (Cole, Gawlinski, Steers, & Kotlerman, 2007; All et al., 1999).

Since animals play a significant role in human health, there is even some proof that contact with animals benefits human well-being in general. Animals positively influence people's physiological condition, morale, and sense of self-worth (Beck & Katcher, 2003). Florence Nightingale is the first known medical professional to involve animals in the healing process in 1860, as "*a small pet is often an excellent companion for the sick*" (Beck & Katcher, 2003, p. 79).

Research embracing *human-animal interaction* (HAI) resulted in the founding of societies and organizing of scientific conferences devoted to the role of animals in human health (Odendaal, 2000), and an increasing number of studies have focused on its hidden mechanisms for human well-being. Some theories, like biophilia and social support hypotheses, attempt to provide explanations for these effects (O'Haire, 2010). The dynamic relationship, called a *human-animal bond* (HAB), is equally beneficial for both partners. This bond is determined by the fact that the basic behaviors of humans and animals are mutually beneficial with respect to health and well-being. HAB is not only limited to people and animals, but

also includes the environment, namely emotional, psychological, and physical interactions (Fine & Beck, 2015; Beck & Meyers, 1996.)

Humans also benefit from the joy that animals bring them and cause them to laugh at themselves (Ager, 2013; Beck & Meyers, 1996). According to Kruger and Serpell (2006), animals not only encourage people to view the surrounding world in a new way, they also have their own special role in assisting individuals to embed new skills and responses in behavioral repertoires. This approach offers a calming affection that supports health. One purpose of animal-assisted activities (AAA) is to offer positive improvement for an individual's self-perception. One goal is to improve self-esteem, self-efficacy, and the internalized locus of control. Although the HAB emerged especially as a result of urbanization, with its consequent enormous high-tech changes, little research has thus far focused on the reasons why people like to have pets (Staats et al., 2006).

While studies have concentrated on the benefits of pet ownership, the main points of interest have been animal-assisted therapy and human interactions with companion animals. In addition, animal-assisted interventions (AAI) and their relation to children's psychological, cognitive, or emotional development have received a certain amount of attention in prior studies (Barker et al., 2003). Still, few unequivocal human-animal studies have been done on the social and psychological mechanisms that decrease undesirable human behavior (Friedmann, Son, & Saleem, 2015; Beck & Katcher, 2003). Yet, an increasing number of studies are documenting the psychiatric advantages of having contact with animals (Barker, Pandurangi, & Best, 2003).

Given the therapeutic assets of animals (Burgon, 2011; Odendaal, 2000; All et al., 1999) and the theoretical benefits of animal contact (Beck & Katcher, 2003), scholars have identified three mechanisms related to animal-assisted interventions. First, the main feature of successful intervention programs is the social support and socialization that animals provide (Berget & Ihlebaek, 2017; Wells, 2009; Gilbey, McNicholas, & Collis, 2007), including the positive actions, interpersonal contacts, and social conditions that result from social relationships and increased human health and well-being (Wells, 2007; Gilbey et al., 2007). Second, AAI favorably impacts such symptoms as depression, anxiety, and stress (Berget & Ihlebaek, 2017; Nepps, Stewart, & Bruckno, 2014). Third, animals enhance self-efficacy and self-esteem. Therefore, attachment theory is closely related to this discipline because it explains the human-animal bond (Berget & Ihlebaek, 2017). Considering the fact that each of the three mechanisms is connected with animal-assisted activities, the EASE intervention consisted of social activities promoting the power of teamwork as well as every participant's role in achieving success.

AAI promotes psychosocial objectives through the intrinsic therapeutic bond between animals and humans (Hart, 2006). In addition, the joy of being with a trained therapy animal may motivate students to participate in activities. AAI may also improve social skills (Pendry, Carr, Smith, & Roeter, 2014; Pendry & Roeter,

2013) and social interactions by promoting care and acceptance (Hart, 2006), providing relationships and support (Walsh, 2009; Wells, 2009; Beck & Meyers, 1996), and serving as a “confidant” and “holding environment” for students (Melson, 2001) that guarantees acceptance (Siegel, 1993) and improves their sense of responsibility, empathy and moral development (Komorosky & O’Neal, 2015; Daly & Morton, 2006) as well as their self-esteem and controlling behavior (Fine, 2000).

Despite warm and caring parents who may be attached to animals and serve as role models for their children, studies have found a connection between empathy and having or interacting with pets. A study of children’s relationships with their pet animals indicates that children who like both cats and dogs are more empathic than children who prefer only cats or dogs. Further, those children who have cats and dogs at home are more empathic than members of their peer group with only cats, dogs, or neither. Furthermore, children who are quite attached to their pets exhibit more empathy than children with less attachment. Thus, empathy and a positive attitude towards animals are significantly related (Daly & Morton, 2006). Having a pet could have a positive impact on the broader community when the practices and emotions related to pet ownership influence community-level factors associated with well-being, such as social value and a sense of community (Wood, et al., 2005). Even as researchers continue to study the benefits of HAI, companion animals are being used as a form of therapy for people facing particular challenges, with the purpose being to provide such individuals with the ability and desire to participate once again in community activities (Odendaal, 2000).

3.1 Animal-assisted interventions

According to Kruger and Serpell (2010), AAIs are defined as “any intervention that intentionally includes or incorporates animals as a part of a therapeutic or ameliorative process of milieu (Kruger & Serpell, p. 36).” The related ideas of animal-assisted therapy (AAT) and animal-assisted activity (AAA) have been highlighted by PetPartners (2020), formerly the Delta Society, which is one of the organizations setting qualifications and criteria for therapy animals in the United States (Kruger & Serpell, 2006). AAT was first mentioned by the child psychotherapist Boris Levinson, who writes about the benefits of his own dog-enhancing therapy (Berget & Ihlebæk, 2011). AAIs and treatments are divided into four categories: pet visitation, AAT, hippotherapy, and therapeutic horseback riding. Pet visitation is the most basic form of pet-assisted therapy. It focuses on initiating communication, contact, and interaction (All et al., 1999). Notwithstanding the fact that animal-assisted programs have recently expanded into the rehabilitation field and offer an alternative and balanced way to progress in social activity-assisted interventions, these programs still face pressure to demonstrate their

significance and efficiency (Kruger & Serpell, 2006; Bizub et al., 2003). Some animal-assisted activities are presented in table 1.

Table 1. Glossary of key terms concerning animal-assisted interventions (PetPartners, 2020; Beck & Katcher, 1996; Faver, 2010)

Type of animal-assisted program	Definition and purpose
animal-assisted intervention (AAI)	a goal oriented and structured intervention in which animals are incorporated in health, education and human service for therapeutic gains and improved health and wellness
animal-assisted therapy (AAT)	a goal oriented, planned, structured and documented therapeutic intervention directed by health and human service providers as part of their profession a wide variety of disciplines may incorporate AAT (possible practitioners include physicians, occupational therapists, physical therapists, certified therapeutic recreation specialist, nurses, social workers, speech therapists, and mental health professionals)
animal-assisted education (AAE)	a goal oriented, planned, and structured intervention directed by a general education or special education professional the focus is on academic goals, prosocial skills and cognitive functioning with measured and documented student progress
animal-assisted activities (AAA)	provides opportunities for motivational, educational and/or recreational benefits to enhance quality of life activities are provided by a trained professional, paraprofessional and/or volunteer
humane education program (HEP)	a method of character education with animal-related stories, lessons, and activities to foster respect, kindness, and responsibility lessons are linked to educational standards to foster basic academic skills as well as empathy and pro-social behavior to prevent violence

Animal-assisted therapy

AAT is a goal-directed intervention with animals as an integral part of the treatment process (Kruger & Serpell, 2006; All et al., 1999). It is more than just another type of therapeutic intervention, as it embraces skilled professionals from diverse disciplines (Mallon, Ross, Klee, & Ross, 2010). AAT practitioners are professionals in health or human services who possess expertise and special skills with animal partners. The key features of AAT involve measured progress and establishing individual goals and objectives for each client (Kruger & Serpell, 2006).

AAT provides a space for contact and interaction between clients and animals. AAT programs provide individual goals that, for example, improve psychological well-being and reduce anxiety. Particularly dogs, as companion animals that have assisted and protected people for thousands of years, help lower stress and anxiety. Dogs offer people a unique feeling of security and coziness when dog-assisted therapy is compared to more traditional therapies (Giuliani & Jacquemettaz, 2017; Hoffman, Lee, Wertenauer, Ricken, Jansen, Gallinat, Lang, & Undine, 2009). Besides domestic animals, experts also use dolphins in therapy programs with people suffering from physical or mental challenges (Wermer, 2008).

Animal-assisted activities

AAA is a general term for animal-assisted interventions. They involve more than one animal in group interventions or individual sessions (Berget & Ihlebaek, 2017). AAA is a practice of incorporating trained animals into a patient's treatment. Practitioners are professionals with specific training (Kruger & Serpell, 2006; Barker et al., 2003), or they are volunteers in associations. AAA is implemented in various environments. Unlike AAT, these activity programs do not need to have detailed treatment goals, and practitioners are not required to keep complete notes on the treatment (Kruger & Serpell, 2006).

AAA also includes less structured programs or animal visitations (Berget & Ihlebaek, 2017; Barker et al., 2003), like having dogs in hospitals and nursing homes (Hoffman et al., 2009; Barker & Dawson, 1998; Bernstein, Friedmann, & Malaspina, 2000). AAA provides opportunities for motivational, educational, recreational, and therapeutic benefits that can enhance a person's quality of life (Kruger & Serpell, 2006).

Animal-assisted education and learning

Living animals can inspire children to learn and provide them with opportunities to learn precisely because animals are predictably unpredictable. Animals are good motivators for learning. Melson (2003) refers to Vygotsky's ideas about learning in discussing the benefits: children remember better those subjects in which they have been more invested emotionally, and learning is optimal if it occurs as part of a rewarding relationship. Animals have a specific role in children's healthy development. Companion animals can more likely be found in families with small children than in other households. Thus, children's development should be studied in such natural environments (Melson, 2003), as Bronfenbrenner's (1979) ecological systems framework suggests. Children interact with and are affected by multiple settings, like family, neighborhood and other communities, peer group, school, and hobbies. Children's development is influenced by the bonds they establish during childhood, including contact with animals (Melson, 2003). It is significant that animals are treated as partners in animal-assisted learning programs, thus confirming a valuable and equal relationship (Fredrickson-MacNamara & Butler, 2006).

In the early 1990s, much attention was given to visitation programs that include bringing trained therapy dogs to school. The purpose of such programs is to encourage students to read more. One of the best known programs is Reading Education Assistance Dogs (R.E.A.D.®). Students attend this program for 13 months. The results have been promising, indicating that students gain at least two grade levels through participating in the program. Some students improve their reading by even four grade levels (Jalongo et al., 2004; Newlin, 2003).

Humane education

Humane Education program (HEP) emerged in the early to mid-1800s, when people were becoming better educated about how to show empathy towards children and animals (Arbour, Signal, & Taylor, 2009). The aim is to introduce a violence prevention program (Faver, 2010) that promotes concern for and care about issues relating to humans, animals, and the environment (Samuels, 2018). HEP is also a practice designed to teach emotional skills like caring and compassion (Arbour et al., 2009; Ascione & Weber, 1996). There is a shared idea that positive outcomes can be achieved by teaching humane perspectives and activities with animals (Ascione & Weber, 1996). Most prosocial intervention programs are implemented at schools, where students have more possibilities for social interaction and the programs can more easily be controlled (Samuels, 2018). Compassion, respect, and kindness are demonstrated through interrelations and interactions with others, in which children are supported and encouraged to show such feelings towards pets as well (Daly & Suggs, 2010; Arbour et al., 2009).

In addition, when children are taught to show empathy towards animals, aggressive behavior directed at other persons will likewise decrease (Arbour et al., 2009; Ascione & Weber, 1996). Moreover, experiences with pets can have a positive influence on children's mental and emotional state. Demonstrating high levels of empathy for pets is related to children's mental state. Gender also plays a role, as girls seem to receive more relief from their companion animals (Bosacki & Tardif-Williams, 2019). Children's activities with pets are positively connected with more humane attitudes towards animals (Ascione & Weber, 1996). Thus, HEP develops pro-animal behaviors and attitudes, but as a side-effect it also benefits how children treat other humans. With such results, these programs can be effective at reducing violence in general (Arbour et al., 2009).

Since there is a link between harming animals and interpersonal violence and antisocial behavior, animal abuse is also an indicator of human maltreatment. Empathy has a specific role as a potential mediator of aggressive behavior towards humans and animals (Arbour et al., 2009). According to Melson (2003), pets are important because they provide strong emotional bonds for children. Companion animals have an important role in families and in relation to adolescents and children. Children's pets promote positive emotions and are their friends.

In the current study, we collected data concerning students' relations with pets. Instead of presenting the results in this study, they are presented later in an article since, despite the fact that many children have pets or interact with animals, only a few studies have focused on pets and their influence on children's emotional and mental well-being (Bosacki & Tardif-Williams, 2019). Moreover, children's relationships and emotional connections with animals are related to positive moral, socio-emotional, cognitive, and physiological results (Daly & Suggs, 2010; O'Haire, 2010). For that reason, Faver (2010) argues that school-based, animal-

assisted learning can prevent aggression and violence. Furthermore, there is a strong positive correlation between animal abuse and aggressive behavior.

Only a few studies have concentrated on students' experiences with pets in learning environments and how those experiences relate to their emotional and social competencies (Bosacki & Tardif-Williams, 2019). They also debate which program is more beneficial, a program in which animal are present or one in which they are absent. Despite those positive effects of living with animals, the negative effects of including animals in such programs need to also be considered. Since the main purpose of HEP is to promote treatment and the well-being of animals, this is an important issue. Despite a lack of statistically significant results, boys have received higher post-test scores concerning empathy and the treatment of animals. Scholars suggest that the reason could be that boys have lower empathy levels in the pre-test, so they have the possibility to make great progress (Arbour et al., 2009).

Benefits and challenges

The most suitable theoretical framework for animal-assisted interventions depends on individual needs and qualities. According to Berget and Ihlebaek (2011), Bowlby's attachment theory (1982) relates to human-animal attachment by providing commonly accepted concepts. It is hypothesized that animals significantly influence the forming of strong emotional bonds and providing safe bases for people in need. One alternative is to consider the social support theory proposed by Cohen and Wills (1985). They suggest that animals can at times replace missing human social support networks. Therefore, animals reduce illness and stress by assisting with human-human social contacts. Biophilia theory (1984), for its part, underlines the natural human tendency to concentrate on nature and life. Nature is closely related with a person's health: the oxytocin hormone reduces stress and decreases a person's heart rate and blood pressure. More than a few studies have reported such results when people had contact with pets. Also, Bandura's (1986) self-efficacy model provides an appropriate theoretical framework for AAA. Animals help humans obtain and develop new capabilities by being living and interactive partners.

Although studies promote the use of AAA in therapeutic processes and for human well-being, many challenges still need to be resolved. Beck and Katcher (2003) have pointed out the risks relevant to AAA interventions. As a growing number of clients, animals, and practitioners are taking part in such programs, the possibility for difficulties is increasing. Despite the many reasons for including animals in treatment plans, clients should be informed about the risks associated with animal contact (Beck & Katcher, 2003). First, animals may pose a danger to human health through zoonoses or by causing allergies or biting them, and, in extreme circumstances, they may even kill a person (Wells, 2009). Second, people's attitudes influence whether and how AAI is implemented and best utilized.

Animal interventions by health and mental organizations can produce positive attention or give rise to anger among administrative authorities (Mallon et al., 2006). Third, even as including living animals in educational or other human-animal interactive settings becomes more common, there is still a lack of structure regulating or tracking the practice (Gee, Fine, & Schuck, 2015; Wilson & Barker, 2003). The lack of clear structure or goals presents problems, as only a few animal-assisted interventions have clearly defined implementation strategies (Wilson & Barker, 2003). Furthermore, the most common criticism levelled at animal-facilitated programs is that they are not target orientated, or if they are, then those targets are not clearly identified or assessed and generally remain unclear (Beck & Katcher, 2003). Fourth, human-animal interactions are complex, and it is not evident that either the person or the animal shares a similar perception concerning this interaction. The animal may experience discomfort in precisely those activities where certain persons derive a sense of joy. For that reason, all bi-directional and voluntary aspects of the interaction must be ensured (Berget & Ihlebaek, 2011). Fifth, to justify possible risks and defend the role of animal-assisted activities within the health care industry, programs must be assessed via an appropriate methodology that makes it easy to replicate and compare the results. Choosing the right animal for a certain client or program in specific surroundings usually requires more information than is available at the time. A lack of proper knowledge may lead to generalizations with false expectations or result in failure (Beck & Katcher, 2003). In addition, a lack of proper longitudinal designs and standardized measures can cause difficulties in drawing valid conclusions (Wells, 2009). To avoid the limitations commonly associated with animal intervention studies, this study involved carefully implemented interventions with goals provided by the national curriculum. Moreover, we collected the principal data using a standardized instrument (ASEBA), and the EASE intervention followed *the EPIC training program*, which was implemented in a previous study (Trotter, 2006).

Despite the many theories that address AAI, the theoretical context for such programs is still inadequate. AAI needs new theories to help predict the impact of human-animal interactions (Berget & Ihlebaek, 2011). Animal-assisted intervention research is still striving to prove its validity and effectiveness (Berget & Ihlebaek, 2011). Kruger and Serpell (2010) declare that theories concerning changes in human behavior are contradictory without evidence of the longstanding advantages derived from animal-assisted programs. Many studies demonstrate the positive effects of AAA and AAT programs, but small samples, poor study designs, and a lack of control compromise their conclusions (Nepps et al., 2014).

3.2 Equine-assisted activities

Interaction with horses has benefited human culture for more than 6,000 years (van Dierendonck & Goodwin, 2005). Horses also have beneficial qualities for

human therapeutic and learning purposes. These unique features include cooperation and tolerance as well as a willingness, openness, and ability to adapt to people (Ewing et al., 2007; Karol, 2007; Vidrine, Owen-Smith, & Faulkner, 2002). Therefore, they have been utilized in versatile ways to promote human well-being. Since 1952, there has been growing interest in using horses for therapeutic rehabilitation throughout the world, when Liz Hartel, paralyzed by polio, won a silver medal for dressage at the Olympic Games in Helsinki (Greenwald, 2001; All et al., 1999).

Being prey animals, the ancestors of domestic horses have had only a few defense remedies available to them. They socialize in herds and have learned to pay careful attention to details. Horses provide a social mirror for a person's invisible emotions. If horses are afraid in such situations, their responses are structured as a "*fight or flight*" mode (Lentini & Knox, 2009; Russell-Martin, 2006; Greenwald, 2001).

Horses are experienced in offering exceptional healing measures that benefit humans (Karol, 2007; Gergely, 2012; Kaiser et al., 2006). Horses are living creatures with an awareness of how to respond and give immediate feedback to others. They can observe and respond to non-verbal communication, thus easily reading and responding to specific behaviors and attitudes. Some studies have focused especially on horses' contributions to mental health programs with special needs groups. Equine-assisted therapy programs help clients gain a deeper understanding of their own values, learning, social skills, and life skills (Hauge, Kvalem, Pedersen, & Braastad, 2013; Trotter, Chandler, Goodwin-Bond, & Casey, 2008). Saggars and Strachan, (2016) implemented an equine-program in one school for 11 adolescents selected by the school welfare team as being at risk of dropping out.

Those participating in equine-assisted activities readily identify with equine emotions, like their inherent fear and need for security and safety. This offers a metaphor for how participants feel about themselves (Karol, 2007). For horses, the only method of survival is to create solid social bonds within the herd (van Dierendonck & Goodwin, 2005). Their highly developed communication system is primarily based on body language and not so much verbal cues, though their ears still play an important role in communication (McGreevy, 2004; Brandt, 2004). While horses have excellent vision and an ability to read body language, the way horses communicate is remarkably intricate (McGreevy, 2004). Brandt (2004) has found that humans understand the meaning of the equine body gestures as well as horses understand human body language (Brandt, 2004). Therefore, working with horses offers an experience of nonverbal communication. When learning to ride, children also gain knowledge of how to communicate effectively in a nonverbal manner (Karol, 2007).

In recent decades, there has been widespread recognition of the importance of including horses in human health, therapy, and other activities (Lentini & Knox,

2009; Lehrman & Ross, 2001). According to Scopa, Contalbrigo, Greco, Lanatà, Scilingo, and Baragli, (2019), horses possess social and emotional competence in communication that humans can easily understand. Furthermore, “kinesthetic empathy” evolves from non-verbal communication activities, especially during riding activities.

Equine-assisted interventions are conducted for persons with emotional problems, substance abuse problems, behavioral issues, attention deficit disorder, anxiety, relationship problems, and communication needs. Similarly, equine programs are often directed at children and adolescents. Since a sense of hope and optimism are essential to how adolescents adapt to difficult situations and handle stressors, avoid problem behaviors, and work towards meeting their goals, these items must be included in any successful program (Frederick et al., 2015).

Horses, being large and powerful, representing control, but still providing autonomy and an opportunity to escape, appeal to children. In the saddle, when “mounted” on a horse, children are “*head and shoulders above*” the adults who rule their life. To be able to lead the horse, children need to learn skills like how to show respect, how to communicate, and how to pay attention to the horse and its needs. Accordingly, riding lessons become “workshops” for children to learn how to “*transform power into companionship*” (Melson, 2001, p. 105). This kind of human-equine bond creates “mutual trust, respect, affection, empathy, unconditional acceptance, confidence, personal success, responsibility, assertiveness, communication skills and self-control” (Quiroz Rothe, Jiménez Vega, Mazo Torres, Campos Soler & Molina, 2005, p. 376).

The EASE intervention conducted in this study follows, with some exceptions, a manual designed for at-risk children and adolescents. Unlike the original program, which included 12 sessions (Trotter, 2006), our EASE intervention totaled eight sessions. The activities mainly included non-verbal tasks, both with and without horses. Previous research (Hauge et al., 2014; Pendry et al., 2014; Ewing et al., 2007; Trotter 2006) has noted the extent to which an EASE intervention aims to improve participants’ well-being by promoting an equine-assisted program. Like in other studies (Saggers & Strachan, 2016; Ewing et al., 2007), we implemented the EASE intervention during school class time. The EASE intervention consists of elements that may reinforce basic psychological needs. Autonomy is supported by providing participants with the choice of whether to participate in the activities and whether the activities should be open ended. A sense of belonging is confirmed through activities based on teamwork. Participants’ sense of competence is endorsed by diverse tasks done in stable surroundings. Notably, the EASE intervention differs from many other equine programs in that it is performed during schooldays and contains some of the goals for demonstrating transversal competence.

The EASE intervention shares similar content with other research concerning equine-assisted programs. Activities are performed with students who have

behavior problems, learning problems, or both (Frederick et al., 2015; Ewing et al., 2007). Students' behavior is supported by horses, who are "mirrors" for participants' emotional states. The activities in the EASE intervention have similar intentions as those suggested by Melson (2001). Horses are massive and strong. If students want to control a horse, they need to transfer their desire for companionship by adopting a gentle and calm approach and clearly communicating their intentions to the horse. Previous research has demonstrated that this non-verbal form of communication aims to teach social skills (Trotter et al., 2008; Ewing et al., 2007; Karol, 2007; Vidrine et al., 2002).

The program supports social and life skills (Hauge et al., 2013; Trotter et al., 2008), encouraging students to complete given tasks together through cooperation and teamwork (Frederick et al., 2015; Trotter et al., 2008) and to learn respect and self-control as well as trust through the human-animal bond (Quiroz Rothe et al., 2005). As reported in earlier research, being in the saddle, "high up there," offers students an experience of power, giving them courage (Melson, 2001). In addition, these mounted and "rocking-chair" activities provide them with experiences of care and empathy (Scopa et al., 2019; Karol, 2007; Trotter, 2006).

Following Brandt (2004), who focused on how horses and humans can understand non-verbal communication through body gestures, the participants in this study were taught how to communicate with horses. A horse herd can model such bonds since communication between horses is comparable to human friendship and interaction (Scopa et al., 2019). Students discussed how such emotions are also important for horses, as they address a fundamental need for safety and what to do if one becomes scared (Karol, 2007; Trotter, 2006; van Dierendonck & Goodwin, 2005). Therefore, before including horses in the activities, every session began with a task or a form of play that enforced teamwork and focused attention on the present situation and environment.

Requirements for equine activities

Horses that are utilized in equine-assisted programs need to fulfill certain criteria for the activities and results to be successful. The Delta Society published the "Standards of Practice for Animal-Assisted Therapy and Animal-Assisted Activities" in 1996, with the purpose being to help structure and develop intervention programs. These standards define the practitioner's role and requirements for the animals being used in AAT or AAA. The requirements for the practitioner include participating in continuing education, documenting the animals' health, and demonstrating respect for the animals and an ability to support them. Animals have their own requirements, too. The most important selection criteria include reliability, predictability, controllability, and fittingness for specific program and clients (Frederickson-MacNamara & Butler, 2006).

But then, as already indicated, it is quite difficult to objectively assess and be fair-minded with respect to the temperaments of horses used for therapeutic riding

purposes. Safety issues are extremely important in equine activities. Therefore, to identify a horse's typical behaviors and improve safety issues, it is necessary to complete a temperament survey or other equine behavioral profile assessment. Practitioners are encouraged to do this while working with horses and spending time with them (Anderson, Friend, Evans, & Bushong, 1999).

3.2.1 Same features with different disciplines

Equine-assisted activities (EAA) are divided into several categories depending on, for example, the practitioner's education or the client's needs. Table 2 presents the most common equine-assisted programs used to improve human well-being. Equine-assisted therapies provide a context for a client and a therapist to be in nature as a way of addressing the client's difficulties. Other equine-assisted could also have therapeutic elements, but their main interest is in dealing with, for example, communication or physical problems (Anestis, Anestis, Zawilinski, Hopkins, & Lilienfeld, 2014).

Table 2. Equine-assisted programs promoting human well-being (Mickelsson, 2019; Path International, n.d.; Frederick, Hatz, & Lanning, 2015; Anestis, Anestis, Zawilinski, Hopkins, & Lilienfeld, 2014)

Type of equine-assisted program	Definition and/or purpose
equine-assisted intervention (EAI)	a universal term for all interventions that involve horses to benefit human participant's mental or emotional well-being
equine-assisted activities (EAA)	any specific activity, e.g., therapeutic riding, mounted or ground activities, grooming and stable management, shows, parades, demonstrations, etc., in which the clients, participants, volunteers, instructors and horses are involved
equine-assisted learning (EAL)	an experiential learning approach that promotes life skills for educational, professional or personal goals through equine-assisted activities
equine-assisted therapy (EAT)	a treatment with equine-activities and/or equine environment rehabilitative goals are related with client's needs by the medical professional's standards of practice
equine-assisted psychotherapy (EAP)	an equine-related treatment to facilitate client's personal exploration, e.g., awareness of behaviors, emotions, and thoughts
therapeutic horseback riding (THR)	an equine-assisted activity to promote cognitive, physical, emotional, and social well-being of individuals with special needs
equine-related treatment (ERT)	a program that includes EAP and THR both
hippotherapy (HP)	a physical, occupational or speech therapy treatment that utilizes equine movement
equine-assisted social education (EASE)	an equine-assisted activity with social pedagogical approach emphasizing 'head, heart, and hands' approach as well as sense of community, activity, and experientiality

Equine-assisted learning (EAL) is a designed learning experience that integrates equine-human interactions to promote such life skills as setting educational, professional, and personal goals through an experiential learning approach with horses. This practice provides opportunities to teach life skills like trust, respect, honesty, and communication. By using non-verbal communication and being in tune with human behavior, horses aid participants in recognizing and learning how proper communication can influence others. Being around horses improves self-awareness by obligating participants to be aware of their environment (Path International, 2017; Kelly, 2013).

Therapeutic horseback riding (THR) as an equine-assisted activity that supports individuals with special needs by providing elements that improve cognitive, physical, emotional, and social well-being. It comprises many areas of an individual's life, like health and education, and sports and leisure-time activities. Equine

movement especially benefits persons with physical disabilities, helping them be more flexible and gain better balance and muscle strength (Path International, 2017).

The American Hippotherapy Association defines *hippotherapy* (HT) as physical, occupational, or speech therapy that utilizes equine movement. The client does not affect the horse; instead, the client is influenced by the movement of the horse (Macauley & Gutierrez, 2004). The purpose is not to learn but to improve balance, coordination, posture, fine motor control, and articulation and enhance cognitive skills. Therapists use conventional treatment methods along with the movement of the horse as a part of their treatment plan (Kruger & Serpell, 2006).

Equine-facilitated psychotherapy (EFP) is an experimental, action-oriented type of psychotherapy (Karol, 2007; Bivens, Leinart, Klontz, & Klontz, 2007) that involves horses as co-partners in the healing process. Having a horse as a co-therapist in a therapeutic setting has proven to be an effective, ground-breaking, and exceptional method of psychotherapy (Ewing et al., 2007; Karol, 2007; Russell & Cumella, 2003). Horses can serve as catalysts and metaphors, a way of permitting clinical questions to surface (Bivens et al., 2007). EFP can improve the psychotherapy process in six important ways:

The existential or actual experience;

the unique experience of being in relationship with the horse;

the experience of the therapeutic relationship with the clinician;

nonverbal experiences in relation to communication with the horse;

preverbal/primitive experiences, such as contact comfort, touch and rhythm; the therapeutic use of metaphors.

(Karol, 2007, p. 81)

The therapeutic interventions, with numerous variations in equine activities, such as riding and taking care of horses (Tuuvast et al., 2017), as well as handling, grooming, leading, riding, driving, and vaulting, offer clients opportunities for self-examination, including greater awareness of their thoughts, feelings, and conduct (Anestis et al., 2014; Quiroz Rothe et al., 2005). Besides choosing a horse and taking care of it, equine-assisted psychotherapy uses games combined with traditional experimental therapy instruments, such as role playing, mirroring, sculpting, role reversal, and Gestalt methods (Bivens et al., 2007).

Thus, horses provide tools for clients to recognize their inner experiences (Anestis et al., 2014; Bachi et al., 2011; Bivens et al., 2007) and to promote self-esteem, confidence, communication and interpersonal effectiveness, trust, boundaries, and setting limits (Schultz, Remick-Barlow, & Robbins, 2007; Roberts, Bradberry, & Williams, 2004). The abilities learned through equine-assisted activities can be transferred to relationships with other people (Tramutt, 2003).

3.2.2 Therapeutic aspects and personal growth

*For the recipient, however,
the horse offers a peak experience,
perhaps unmatched by any other,
with a totally unique physical experience
while in a joyous social environment.*
(Hart, 2000, p. 94)

There is evidence that therapeutic horseback riding (THR) enhances posture, balance, walking and muscle tone, weight bearing, and balance when sitting (Zadnikar & Kastrin, 2011; Young & Bracher, 2005). These outcomes are the result of normal sensorimotor experiences with a horse's gait (Young & Bracher, 2005). Animals in general act as "communication mediators" within the therapeutic environment and provide a calming effect and facilitate attachment to both the horse and therapist (Yorke, Adams, & Coady, 2008; Chardonnnens, 2009). Many equine-assisted programs have a profound effect on clients, even though some EAT practitioners are not professionals highly educated in psycho-therapeutic research. Being around horses improves a person's self-esteem, sense of responsibility, and self-confidence. These programs also teach clients to care for another living being, and through that experience, realize how to take care of themselves. Many equine-assisted programs target particular groups, helping them develop better peer connections and an encouraging group ethos (Karol, 2007). Equine-assisted therapy shares similarities with other experimental learning programs. Given that "*at-risk adolescents*" are usually unwilling to cooperate with therapists and teachers, whom they view with mistrust or misunderstanding, a nine-week equine program for youth with severe learning and emotional disorders has demonstrated positive improvements in conduct and social acceptance. Qualitative interviews have substantiated such results (Ewing et al., 2007).

The aim of equine-assisted healing programs with specialized practitioners is to offer an optional therapeutic and learning experience (Burgon, 2011). Equine-assisted activities offer such benefits as encouraging people to be less judgmental and better motivated (Yorke et al., 2008), with the horse serving as a symbolic figure or metaphor (Karol, 2007; Bivens et al., 2007), thereby improving self-esteem, self-confidence, and a sense of mastery (Trotter et al., 2008; Bizub et al., 2003; Vidrine et al., 2002), as well as adapting behaviors (Schultz et al., 2007; Kaiser et al., 2006).

EAL provides an exceptional learning experience for personal growth (Friedrick et al., 2015). A study analyzing 16 journals, theses, books, and websites revealed two positive outcomes of equine programs targeting adolescents. First, they develop strength of character (self-esteem, confidence, responsibility, caring, passion, goal setting, happiness, trust, and positive self-perception). Similarly, equine-assisted 4-H programs are positively associated with the development of

perceived leadership and life skills. The more individuals participate in a 4-H program, the more their leadership and life skill outcomes will improve (Boyd et al., 1992).

Physical self-efficacy and ability, together with physical self-acceptance, promote adolescents' self-belief and their abilities. Thus, physical activity and motivation are related to improved self-esteem, personal horsemanship characteristics and physical capabilities, self-efficacy, and sense of approval among adolescents. A horsemanship program can positively impact self-esteem (Saunders-Ferguson, Barnett, Culen, & TenBroeck, 2008). The same outcome has been noted in programs involving horsemanship activities, such as saddling and feeding, chores that have an influence on an individual's motivation, sense of liability, self-reliance, apprehension, and mental state. By participating in horsemanship activities, adolescents learn new skills and gain experiences that support positive self-esteem development (Iannone, 2003).

Obstacles

The diversity of different philosophies and practices with respect to equine-assisted activities has created confusion. Some approaches have frames of reference that prioritize cognitive behavioral methods, while others utilize psycho-analytical and psycho-therapeutic person-centered and experiential gestalt approaches (Lentini & Knox, 2009; Frewin & Gardiner, 2005).

Despite the diversity of horse programs being used, research methods do provide an adequate platform for analyzing equine-assisted activities. This study has three controls in addition to an equine-assisted intervention, meaning that it differs from most research concerning equine-assisted programs, which seldom have control groups. Nevertheless, prior studies have identified a discrepancy between quantitative results and qualitative feedback (Pauw, 2000; Kaiser et al., 2006). Also, the study designs have resulted in contradictory findings regarding the benefits of equine-assisted interventions (Kaiser et al., 2006), leading to several recent attempts to establish clear-cut standards for conducting research and documenting practices.

Equine-assisted programs lack empirical support especially for those suffering from mental disorders (Anestis et al., 2014). The outcomes when using quantitative methods have often been statistically suspect. Though qualitative interviews and observations indicate a positive change (Ewing et al., 2007), no convincing evidence has been presented in support of hippotherapy as an intervention for targeted purposes due poorly designed and implemented studies (Rolandelli & Dunst, 2003). Thus, diverse research methods are essential to successfully measure equine-assisted activity outcomes (Saunders-Ferguson et al., 2008).

Equine-assisted programs and other animal-assisted rehabilitation programs face another challenge as well: they must remain flexible, innovative, and appropriate for clients (Bizub et al., 2003). Activities and services need to assist clients

in developing their potential, especially during initial sessions (Fine, 2000; Cnaan & Blankertz, 1992). Also, equine-assisted programs raise concerns relating to animal welfare. Horses demand adaptive responses from their caregivers (Pauw, 2000). Equine-assisted programs could increase the stress levels of horses, leading to stress-related behavior. This stress results from clients' behavior traits, such as uncontrolled anger or acting out in front of horses, which may affect the safety of the horses (Kaiser et al., 2006).

Maintaining a horse is not cheap, so it is obvious that an equine business is identified as a luxury sport, especially in Finland. In short, equine-assisted programs are costly. They require a specific environmental structure and appropriate human resources (Berget & Ihlebaek, 2011). Many equine-assisted programs have a specific number of sessions and practices (Trotter, 2006). Shortening the length of the programs could significantly reduce their costs (Frederick et al., 2015). Therefore, practitioners need to consider their value when comparing possible results and cost. Even still, it is important to improve the benefit-cost ratio of horse programs given the significant relationship between overall horsemanship and life skills. It is essential that adolescents participate for as many years as possible (Smith et al., 2006), despite the costs of equine-assisted programs.

Therefore, securing financial aid for equine programs is essential, one of the principal matters to resolve if equine-assisted programs are to expand. The programs also demand trained personnel able to work with groups without any prejudice against or misunderstandings of those with special needs. To avoid such problems, the personnel and stable owners need guidance and information about the therapeutic agenda and benefits of the program, both with respect to targeted groups but also the whole stable environment. This requires qualified and educated practitioners with suitably trained horses.

3.2.3 Equine-assisted activities in Finland

Horses are harnessed many ways to support social well-being and health in Finland. They have roles as teachers and as partners who do not discriminate against anyone. In addition, in addition to the fact that interactions with horses improve emotional and life skills, horse-related activities offer both physical and psychological benefits. Equine-assisted activities can be used for several purposes, including preventive work in the social services, supporting children's growth, and maintaining senior citizens' daily functioning. Researchers have noted that equine-assisted activities will increase remarkably in the future (e.g., Hippolis, 2019).

Equine-facilitated therapies

As a holistic rehabilitation approach, this type of intervention is implemented by a team consisting of a certified practitioner and the horse, often with a therapy assistant as well. Therapy goals result from the therapist's occupational

background and the client's needs for educational, motoric, or emotional improvement. The main element that the horse provides is movement, which has an impact on the client's balance and sensory and motor systems. The three-dimensional movement that a person experiences when on the back of a horse generates motor stimulation in a way that resembles walking. In addition, equine interactions offer both senso-motor and psycho-motor experiences. Therapists become certified through a training program established in 1988. The three-year training program is carried out by the Equine College of Ypäjä in cooperation with the Finnish Association of Equine Facilitated Therapies. Candidates must meet specific criteria to be accepted into the training program before becoming a certified therapist. First, they need at least a college-level education in social sciences or health care, having completed at least 210 study credits. Second, they need full-time work experience in the rehabilitation field. The third requirement is outstanding competence in the equine business and good horseback riding skills. Certified therapists receive the title *ratsastusterapeutti-SRT* (essentially, a certified equine therapist) (Suomen Ratsastusterapeutit ry., n.d.).

Para-equestrian riding

Horseback riding can be a sport intended for everyone. Riding for special needs individuals was formerly called "*riding for the disabled*" and established by the Finnish Equestrian Federation. In 2019, this designation was renamed "*para-equestrian riding*." Para-equestrian riders can practice the same riding sports as "abled" riders, but with adjusted instructional and environmental changes and modified equipment. The main purposes are to offer disabled riders the opportunity to develop their riding skills, refresh themselves mentally, and keep fit. Besides these goals, which apply to all disabled riders, support and coaching for competitions has taken some riders as far as the Paralympics (Suomen Ratsastajainliitto, n.d.).

The Finnish Equestrian Federation has organized only a few courses that provide training in becoming a *para-equestrian riding assistant*. They teach basic equine management skills and require membership in the Finnish Equestrian Federation as one of the qualifications for trainees. Training for this 20-hour course is done on the weekends. The main contents include basic information about disabilities and guidelines for walking and leading a horse. Trainees are selected based on the order in which they enroll.

Every other year, the Finnish Equestrian Federation organizes *para-equestrian practitioner* education for a maximum of 16 trainees. The trainees are selected on the basis of their experience with para-equestrian riding, equine management, and riding skills, but geographical need is also taken into account. Precise background qualifications must be met for enrollment. The trainee must be a certified para-equestrian riding assistant, have para-equestrian riding assistant experience totaling at least 120 hours or three years, including at least 40 hours or one year

working as a practitioner. The trainee must also possess a certificate showing they have completed a first-aid course and knowledge of B-level riding requirements. The practitioner education course has two goals. First, practitioners should be able to independently provide early instruction in horseback riding and horse management skills for special needs groups. Second, practitioners must be able to establish a group and train needed assistants for working with that group (Suomen Ratsastajainliitto, 2019).

Social-educational equine-activities

Equine-activities practiced as social education have offered a promising way to support “at risk” groups in Finland, like students with learning disabilities or behavior problems (Okulov & Koukkari, 2005). Horse stables in different parts of the country aim to decrease social exclusion and promote a sense of community and social growth, thus correcting existing harm. The stable environment serves as a holistic educational community. It provides a sense of security and healthy interactions, thereby supporting a greater sense of responsibility (Koistinen, 2002).

Aducate, the Centre for Training and Development, which partners with the University of Eastern Finland, established a pilot course in 2002 in equine-assisted social pedagogy/education for professionals working in the social services, health, or education. The social pedagogical framework, which also promotes a sense of community, is connected to equine-assisted activities that support well-being. The approach is based on beneficial equine interactions and envisions the stable surroundings as a social community that supports the social growth and welfare of at-risk children, adolescent, and adults (Koistinen, 2002).

Since its beginnings, the education is now provided at three institutions with a university partnership conforming to the standards of a social pedagogical discipline. The course consists of 25–30 study credits, including social pedagogical theory and professionalism, social rehabilitation, and equine-assisted social pedagogy/education interventions and practices. The requirements for trainees include at least a secondary education, good horsemanship skills, and at least one year of work experience in a targeted equine-assisted social pedagogy/education field. After completing the training, new practitioners need to apply for certification as an expert in equine-assisted social education (*sosiaalipedagoginen hevostoimintaohjaaja* (SPHT®)). If applicants met specific criteria, they are then accepted and certified by the Association for Equine-Assisted Social Pedagogy/Education (Sosiaalipedagoginen Hevostoimintayhdistys ry., n.d.).

4 Support in Finnish comprehensive education

Following the aims of National Core Curriculum 2016, creating inclusive environments is one of the goals of the Finnish national core curriculum. School communities are guided in how to value empathy and kindness, providing each student or groups of students with equal support for development and learning. School activities are to be predictable. Building trust is emphasized, as every student needs to experience being heard and treated fairly. In addition, social relationships should promote a harmonious working climate. A student's healthy development is also improved through other activities supporting education; for instance, recess, morning assemblies, and other events are important for enhancing school community spirit, social relationships, and coping with studies (FNAE, 2016). The three interventions discussed in this study involved elements that provided students with opportunities to share their thoughts and improve their social relationships through teamwork. The EASE intervention especially, with outdoor activities and interactions with horses, is designed to promote well-being of the student.

The social task of Finnish basic education is to promote equity, equality, and justice, while emphasizing inclusion and educational accessibility. Each school has an educational task to support students' learning, development, and well-being. This task is fulfilled in cooperation with students' home life. Basic education develops human capital, consisting of competence, and social capital through interaction, contacts, and trust. Together, they improve individual and social well-being and development. Since the changing world has an impact on students' well-being and development, all students are encouraged to recognize their potential and select individual paths for learning, to deal with pressures in a constructive manner, and to make critical self-assessments concerning their own future (FNAE, 2016). This study responds to a need for curriculum-based outdoor activities that provide students with opportunities to succeed in front of the group. Stable surroundings offer students the chance to choose from a range of tasks.

In addition to respecting life, human rights, democratic values, and other people and nature, basic education emphasizes the inviolability of human dignity through equity and equality. Education is essential in supporting students' growth as human beings and their place within the community; it provides students with new knowledge and skills to assess their learning, experiences, and emotions. The Finnish National Core Curriculum underlines elements that inspire students' competence. Experiences of joy and positive emotions as well as creative activities promote learning. Physical elements, language, and divergent senses are important tools for monitoring the thinking and learning process. In addition,

students should be active performers, learning to set individual goals and solve problems in diverse settings (FNAE, 2016).

Schools are learning communities that promote well-being and safety as preconditions for learning. Besides learning, the school environment serves as a well-fare group with duties to improve the preconditions for good physical and mental health, social well-being, and all related activities. Thus, basic education aims to develop a flexible school culture with versatile activities that promote well-being, participation, learning, and sustainable living. Shared activities and physical education are natural components of a student's school day, providing support for mental well-being as well. Health and well-being, suitable habits and manners, cooperation, responsibility, and promoting sustainable development contribute to general knowledge and ability. A central goal of the curriculum is to support students' growth and educate them in how to become responsible and ethical members of society. This educational goal aims for balanced adults with healthy self-esteem. School work supports fundamental values, conceptions of the learning process, and school culture. Regardless of their role, each adult working in a school is responsible for the well-being of students. Teachers and students' guardians work together to enhance students' learning, growth, and well-being. Teachers employ various pedagogical methods and approaches to achieve these ends, such as observing potential problems, providing guidance and support, and ensuring that each student is treated in a respectful manner (FNAE, 2016).

4.1 Transversal competence

A central educational goal is to improve students' prevalent abilities and knowledge, expanding their worldview. As such, contents and objectives are defined in core subjects, areas of transversal competence, and multidisciplinary learning modules. Transversal competencies contain elements that support a sustainable way of living in safety and human relationships, health, transportation and mobility, managing technology needed in daily life, and balancing consumption habits with personal finances. Transversal competencies have to do with the knowledge, skills, values, attitudes, and determination necessary to make sense of the world, since the changing world demands new skills and competencies. They are linked to different fields of skills and knowledge, enhancing students' future growth, learning, work, and community activities. Furthermore, a student's uniqueness and personal strengths are recognized, guiding them to better appreciate themselves. These multiple skills are included in every subject since they are needed to cope with daily situations. Thus, the purpose is to provide students with opportunities to experience and recognize various phenomena and realize how they all impact their own and other people's well-being, health, and safety. Students are provided with opportunities to appreciate others and engage in collective work to develop their social and emotional skills. In addition, students practice

management and self-regulation and learn to set personal boundaries. They learn to appreciate and interpret art, culture, and cultural heritage as well as to communicate, create, and modify culture and recognize how they contribute to well-being (FNAE, 2014).

4.2 Informal learning

The importance of informal education was acknowledged as early as the 1960s in a UNESCO report. The report mentions it as education that is implemented somewhere other than a formal educational setting (Faure, Herrera, Kaddoura, Lopes, Petrovsky, Rahnema, & Champion Ward, 1972.) Informal learning has been integrated into educational settings during the last few decades (Salmi, Thuneberg, & Vainikainen, 2017), and it has been successful especially when learning about new technologies. Informal learning is regularly contrasted with formal learning, with formal learning being intentional and arranged by time and based on achievements in a properly designated space with teacher support. Yet, the two have elements in common, with both including learning that is either an unorganized byproduct or more structured in an instructional environment (Kyndt, Gijbels, Grosemans, & Donche, 2016). Accordingly, informal learning as out-of-school education that provides certain methods and techniques for formal learning (Salmi & Thuneberg, 2019).

According to activity theory, behavioral actions are the result of social elements (Engeström 1999). Thus, instead of providing information to students by lecturing, educators need to arrange conditions that facilitate learning. This means that teachers should use optional educational settings to increase students' interest, motivation, and achievement, since children learn through interacting with objects and other people. Moreover, real-world items with subject content adjusted to fit students' motives and values help increase motivation and make practical learning more memorable for students (Holmes, 2011). Informal learning comprises practical "hands-on" actions inspired by the environment. In addition, an individual's activities and performance are emphasized when they are provided with autonomous choice in tasks (Salmi et al. 2017). This method is similar to a social pedagogical approach involving heart, head, and hands (Mickelsson, 2018, 2019).

Students' emotions, performance and social relations impact their situational motivation, which is a typical aspect of extrinsic motivation (Salmi & Thuneberg, 2019). Informal learning is effective because it emphasizes collaboration and interaction, skills necessary to achieving authentic goals. Working in teams has a considerable influence on how a team member comprehends informal learning. Additionally, team commitment and team processes are important promoters of informal learning (Kukenberger, Mathieu, & Ruddy, 2015).

Non-motivated students usually perform tasks in a passive manner. Yet, when students are more engaged with learning, they realize how meaningful education

is for them. Additionally, through intrinsic regulation students no longer require external awards and begin to thrive based on curiosity and a joy for learning (Salmi & Thuneberg, 2019).

The educational setting and milieu relate to psychological well-being by providing students with a sense of autonomy and affecting their opinions about a subject. When the learning environment is supportive and satisfies a need for competence, relatedness, and autonomy, then students are more capable of becoming involved in learning and engaged with school. Furthermore, the better these psychological needs are met, the better the outcomes. With greater self-determined and autonomous motivation, students are more willing to study and receive better grades. This all leads to higher self-esteem (Salmi & Thuneberg, 2019).

In this study, the EASE intervention took place in an authentic stable environment, providing a suitable setting to address students' basic psychological needs. Through relevant tasks and collaboration, students will hopefully become more engaged with meaningful activities. Additionally, the goal is to enhance students' sense of competence through daily tasks and duties at the stable, which are similar and predictable each time, so students can anticipate how to succeed in them, improving their self-esteem.

According to Lave and Wenger's (1991) theory of legitimate peripheral participation and situated learning, learners gained expertise in real environments through progressively challenging practices. Furthermore, learners in such interventions are supplied with the motivation to achieve goals in a professional environment. Researchers have found that informal learning is related to self-determined motivation with various instrumental aspects (Cole & Vanderplank, 2016). Salmi and Thuneberg (2019) identified a similar phenomenon concerning motivation: when students sense they could pursue tasks autonomously, they had higher intrinsic motivation.

Thus, the EASE intervention is closely related to informal learning, with collaborative out of school exercises aiming to help students manage real-life tasks (like handling horses). This intervention provides students with autonomy by giving them the chance to make their own decisions about how to perform a task. In addition, tasks are easier in the beginning, but they become more difficult towards the end of the intervention.

Outdoor education as a motivational concept

Ford (1986) defines outdoor education as *education in and/or about the out of doors*. This kind of education is a process by which to extend curriculum or include new learning tasks. According to Ford, outdoor activities may include "curriculum-orientated, behavior-oriented, recreation-oriented, conservation-oriented, and/or camping-survival/oriented" activities. The key issue is to enhance knowledge, skills, and attitudes, thus providing students with new life experiences (Ford 1986). Outdoor learning programs are supported by learning theories.

Outdoor education depends on even more factors, including environmental factors, aiding the ability of students to change plans due to extenuating circumstances (for instance, weather conditions) and demanding that they support the efforts of others (Paisley, Furman, Sibthorp, & Gookin, 2008).

Students' self-esteem can be enhanced by outdoor education programs. Outdoor interventions are more successful if someone other than the students' teacher serves as the instructor or if they are based on cognitive activities. The challenges provided by such programs improve, for example, cooperative learning and self-regulation, skills that students continue to demonstrate also in delayed post-test data (Hattie, 2008). Hattie (2008) assessed meta-analyses of numerous interventions studies, but did not account for animal-assisted programs or interventions. Therefore, this study seeks to fill this gap concerning equine-assisted interventions in a school-related context.

Each intervention program had explicit content and was implemented in a specific setting. The outcomes are interpreted in detail in later chapters. They are dependent on how carefully the various elements are applied and recognized by those involved (Durlak & DuPre, 2008). The criteria for testing the reliability of the intervention's outcomes consist of *1) adherence – accomplishing the modules of the original program; 2) duration – the length, number, and frequency of the program sessions; 3) grade of distribution – whether the provider used appropriate methods and techniques when carrying out the procedures of the program; 4) responsiveness of partakers – the degree of engagement and involvement in activities during the intervention program; and 5) differentiation of program – whether the crucial attributes demonstrate a difference in control* (O'Donnell, 2008, p. 34).

The concept “*situational motivation*” provides information on a person's self-regulatory processes when that person is engaged in and experiencing certain activities (Guay, Vallerand, & Blanchard, 2000). Additionally, the Finnish Government Decree on the National Objectives for Education (2012) states that learning environments should be spaces, places, communities, and procedures that enable studying and learning. They need to support both personal growth as well as the growth of the whole community, facilitating learning and interaction for all (Finlex, 2012). Furthermore, the national core curriculum emphasizes multiple well-function learning environments that enhance interaction, participation, and constructive knowledge (FNAE, 2014).

Researchers have noted that physical activity interventions have positive outcomes with respect to depression, anxiety, and problem behavior among children and adolescents (Ekeland, Heian, & Hagen, 2005), including a positive influence on learning (Howie & Pate, 2012), making these programs and environments useful for education purposes. Moreover, some studies demonstrate that positive emotions and social connections in combination with physical exercise positively influence each other (Kok, Coffey, Cohn, Catalino, Vacharkulksemsuk, Algoe, Brantley, & Fredrickson, 2013).

Beames (2017), though, has expressed concern about innovations in outdoor education. Since educational innovations include ideas, methods, and products, educators need to separate out those elements that might decrease characteristic outcomes from outdoor education programs (Beames, 2017). Berman and Davis-Berman (2005) make a connection between outdoor education and positive psychology, sharing the idea positive outdoor innovations can improve student learning and growth. Also, by focusing on positive traits and qualities, they can guide students in developing both their personality and resilience. This belief is acknowledged in this study, since all interventions are implemented to improve students' positive experiences in collaboration with classmates who help each other to succeed in tasks. Teamwork exercises help provide them with a sense of autonomy (choosing the way to solve given tasks), relatedness (as a member of the group), and competence (accomplishing all tasks).

4.3 Special education

The Finnish education system values education highly and embraces the ethos of providing education for all (Thuneberg, Hautamäki, Ahtiainen, Lintuvuori, Vainikainen, & Hilasvuori 2014). To emphasize success for all students, Finnish educational policies include special education as an integral part of every school and support students with various needs (Väljjarvi & Sahlberg, 2008). Human rights, equality, democracy, natural diversity, preservation of environmental viability, and endorsement of multiculturalism are all listed as educational values by the Finnish National Agency of Education (2017). Correspondingly, special education services play a significant role in Finland's educational policy with respect to supporting inclusiveness in schools (Halinen & Järvinen, 2008). Since the 1980s, Finnish education policy has aimed to improve both local and school-based curriculum by developing good practices and interventions. The main intention is to support every learner and implement a deep and broad-based educational learning system based on the professional capacities of teachers and headmasters as well as to value students' skills in relation to achieving personal growth and a stronger sense of morality and creativity (Sahlberg, 2007; Halinen & Järvinen, 2008). Learners' needs and characteristics are addressed by individualized learning and differentiation, instead of by forming ability-based groups (Väljjarvi & Sahlbeg, 2008). The national core curriculum leaves space for local decisions at how best to adjust teaching and learning in a way that is appropriate for every student and group (Sabel, Saxenian, Miettinen, Hull Kristensen, & Hautamäki, 2011).

The Finnish school system supports equality and social inclusion by reducing the risk for exclusion (Sabel et al., 2010). Emphasis is placed on flexible preventive support and actions (Vainikainen, Thuneberg, Greiff, & Hautamäki, 2015; Takala & Ahl, 2014; Hotulainen & Takala, 2014). The creative capacities of teachers and other school workers are encouraged, with the aim being for them to

innovate and introduce new types of activities for the purposes of teaching and learning. Best practices and innovations are shared through networks and other sites (Sahlberg, 2007). Lifelong learning demands elements that encourage growth, learning, and healthy self-esteem, thus the national core curriculum also specifies that every student should have the possibility to progress in accordance with his or her own personal study program. Learning results from students actively and purposefully engaging with activities. Although similar general learning principles apply to all students, actual learning depends on a student's prior constructed knowledge, motivation, and working habits. Thus, learning is an active goal-orientated process involving independent or collective problem-solving skills (FNAE, 2016). The learning environment consists of school buildings and facilities and traditional instructional tools and learning materials, but schools are also encouraged to create optimal environments that help students learn (Sahlberg, 2007) in a way that supports their growth, health, and motivation to learn as well as their cognitive and emotional factors, interactions, and human relations. The objectives are to increase activeness, self-direction, and creativity by giving students opportunities to handle challenges and develop problem-solving skills as well as to promote dialogue, interactions, and group work (FNAE, 2016). In addition to ideas specified in the national curricula, each intervention involves elements designed to promote social interaction, motivation to learn, and working in groups. The EASE intervention differs from the other two interventions (ART and MATH) by its versatile choice of activities and problem-solving exercises, which are accomplished by working together with others.

At the time the interventions discussed in this study were implemented, 30 percent of Finnish basic education students received either part-time special education within a mainstream setting or full-time special education in special classes (Sabel et al., 2011). Since the 2010 school reform, separate special education is no longer so common. In 2016, one out of six students received either intensified or special support (Statistics Finland, 2020). Also, the focus of special education changed from focusing on students' problems to focusing on their personal strengths and needs, with the aim of supporting personal initiative and self-confidence. Every student with special needs has an individual educational plan (IEP) consisting of various teaching methods, materials, learning environments, objectives, core contents, and principles for assessment. Part-time special education is implemented either in a small group or individually (FNAE, 2016), but students who demand more support study in a full-time special needs class. The emphasis is to prioritize mainstream education whenever it is appropriate (FNAE, 2014). Even though the idea of inclusion is accepted at a normative level, the shift towards greater inclusiveness has still been a prolonged one (Paju, Rätty, Pirttimaa, & Kontu, 2016; Jahnukainen, 2011).

Special educators assume many duties in Finnish schools. Takala, Pirttimaa, and Törmänen (2009) provided a list of special educators' tasks before the 2010

school reform. At that time, three main elements defined the work of special needs teachers: teaching, offering consultation, and working with students' background information to plan support. As the emphasis was on early support, as many as 22% of all school-aged students received part-time special education. The percentage was highest during the first school years, before dropping towards the end of compulsory education (Sarromaa Haustätter & Takala, 2011). By co-operating with classroom teachers and subject teachers and aiding them in writing obligatory ILPs, special needs teachers serve as support teachers within schools. Their consultative role is emphasized in student matters (Saloviita & Takala, 2010), with the annual ILP plan, which consists of such items as teaching, offering support, and individualized assessment, is formulated in co-operation with the students and parents (Basic Education Act, 2010).

Although labeling students by their disabilities and demands is decreasing, the use of special education codes and categories still play a role when special education receives funding. If SEN students are not capable of studying in a mainstream classroom, they are referred to special education classes (Jahnukainen, 2011). Before the 2010 school reform, SEN students either studied in mainstream classrooms, following a "normal curricula," studied one or more individualized subjects, or studied all subjects in an individualized manner.

There are several reasons for placing students in a special education classroom. Students have severely delayed developmental or neurological disabilities, a social emotional disorder, an autism spectrum disorder, a language disorder, visual impairment, hearing impairment, or other specific reason that they require special attention. In the years 2001–2010, special education was arranged in various ways, entirely in mainstream classrooms, in part-time special education settings and mainstream classrooms, partly in mainstream classrooms and partly in special classes, or entirely in special classes. The basis for receiving part-time education during those years included speech disorders, reading and writing difficulties, mathematical problems, foreign language learning problems, a social emotional disorder, or other difficulties in learning (Statistics Finland, 2020).

Every school has a school welfare group, which is a unique Finnish model supporting well-being in the school community. The aim is to assess every student's learning and well-being as well as care for SEN students (Sabel et al., 2010). This group meets both the basic learning prerequisites of students and their holistic well-being needs, including physical, psychological, and social needs. The emphasis underlines prevention and the early detection of potentially harmful conditions for students. Parents are closely engaged with this cooperative work, as close cooperation with guardians is essential. The main principles for the school welfare group suggest positive activities that promote health, well-being, security, social responsibility, and interaction (FNAE, 2016; Basic Education Act, 2010). To involve parents in students' well-being in this study, we asked them to

participate in the last session of the EASE intervention, when they were invited to join and experience what their children had learned during the program.

In addition to teachers and parents, another important group also supports SEN students in schools: school assistants have important roles and tasks both in mainstream classrooms and special education classes (Takala, 2007). Since the number of SEN students has increased in recent years, more school assistants are now required. A student's right to receive aid from a school assistant is determined by the Basic Education Act (2010). However, Takala (2007) notes that despite the benefits of having an extra adult in the classroom (such as students receiving more personal attention), school assistants acknowledge that SEN students still face barriers in the classroom. They interact less with their peer group, they are separated from classmates, and they become overly dependent on that assistant. In this study, each intervention group had a school assistant, who mostly helped them behave better, listen to the teacher, or carry out given tasks. In the EASE intervention, school assistants also accompanied groups from the school to the stable and back to the school afterwards.

Intervention as a special education practice

SEN students are often described as “*at-risk*” students. The notion of being at risk can be interpreted in several ways, like “being in danger” (Cambridge Dictionary, n.d.). Furthermore, an at-risk student is a student who is more likely to leave school before graduation (Kagan, 1990); being unsuccessful in school, having low self-esteem with low academic achievements (Donnelly, 1987); and helpless or at-risk for poor performance and other problems (Cleary, 2015). Whether or not to label such students as at risk raises ethical concerns. Nevertheless, when taking into consideration the problems that these students face, they would most likely benefit from special support through targeted intervention programs.

Intervention can be described as “*purposeful action by a human agent to create change*” (Midgley, 2000, p. 113). It is the most powerful method used to enhance health and well-being outcomes. Unfortunately, the nature of such outcomes are still not adequately known or practiced in schools or communities (Durlak & DuPre, 2008). Bronfenbrenner (1974) has emphasized that the most effective interventions contain ecological elements, including family matters and essential conditions for life (Bronfenbrenner, 1974). Schools should provide familiar ecological elements for students, including by means of interventions that endorse social skills, better behavior, learning, and an ability to pay attention.

In this study, three different interventions were performed to answer the following questions. Do special students need an additional support when they are placed in special classes? What kinds of interventions should be implemented to enhance well-being in a special education setting? With respect to at-risk students, researchers have found that their level of self-esteem predicts their academic achievement (Baumeister, Campbell, Krueger, & Vohs, 2003). Students who

suffer from such problems as hyperactivity, impulsivity, and an inability to pay attention are more likely to experience problems with conflict management, social skills, regulating emotions, and having friends. Understandably, they need more training to be successful (Joseph & Strain, 2003). Landrum et al. (2003) recommend that social skills interventions should be performed like any other academic subject with SEN students, including similar instructional practices, instruction with designed response possibilities, comments on actions, and the use of contingencies in natural settings (Landrum et al., 2003).

Ecclestone and Hayes (2009) have designated four types of school interventions: first, specialist interventions for emotional and behavioral problems; second, generic interventions with circle time, mediation, anti-bullying schemes, and mentoring; third, those with counsellors, learning managers, stress workshops, and classroom assistants; and fourth, those that support emotional well-being, like “learning to learn,” thinking skills, and learning assessments (Ecclestone & Hayes, 2009).

In their meta-analysis of 28 studies, January, Casey, and Paulson (2011) discovered that school interventions aiming to improve students’ social skills and social behavior have a minor positive effect on overall student learning and well-being. Essentially, early support seems to be more effective than interventions implemented with older students (January et al., 2011). In addition, it is quite challenging to perform social skill interventions if all participants have social and emotional problems. These types of interventions are only moderately effective when students otherwise reinforce each other’s behavioral problems (Bellini, Peters, Benner, & Hopf, 2007; Magee Quinn, Kavale, Mathur, Rutherford Jr., & Forness, 1999), or when students’ challenging behavior negatively impacts a teacher’s behavior and the learning environment (Haydon & Hunter, 2011).

Response to intervention

Despite the fact that the interventions discussed in this study do not meet the criteria for Response-to-Intervention (RtI) research, this method of assessing the support provided to students is still introduced here. RtI is a multi-step method used to support students’ learning disabilities (Sugai & Horner, 2009) that focuses on providing early support to prevent academic failure and misbehavior (Grosche & Volpe, 2013; Hughes & Dexter, 2011; Fuchs & Fuchs, 2007). RtI attempts to meet students’ needs by changing the pedagogical routines and reflective responses (Grigorenko, 2009), as not all learning difficulties are the result of a student’s learning deficits but also due to unsuitable teaching (Hughes & Dexter, 2011). RtI demands scientifically proven interventions that provide positive outcomes for all students (Sugai & Horner, 2009; Cummings, Atkins, Allison, & Cole, 2008).

RtI focuses on student deficits and offer support to SEN students within mainstream classrooms. RtI consists of three-tier continuums, each of which defines the support provided that particular level. Also, a student’s improvement is

carefully followed at each tier of the intervention (Grosche & Volpe, 2013.) Hughes and Dexter (2011) have defined the RtI modules as including *a) a scientifically based core curriculum; b) universal screening; c) progress monitoring; and d) decisions about adequate progress in subsequent tiers* (Hughes and Dexter 2011, p. 5).

A special teacher's role and responsibility is to encourage schools to take into practice RtI procedures. Special teachers consult class teachers and subject teachers and provide aid for versatile methods used to teach a diverse range of students. The indeterminate range of issues affecting students with learning and behavioral problems demands specific methods for assessing the best types of academic and behavioral interventions. Special educators enable SEN students to find the right programs and curricula for their needs (Cummings et al., 2008). RtI contains principal features for improving success among all students, not just SEN students: 1) *interventions that are supported by scientifically based research; 2) interventions that are organized along a tiered continuum that increases in intensity, for instance frequency, duration, individualization, or specialized supports; 3) standardized problem-solving protocols for assessment and instructional decision making; 4) explicit data-based rules for assessing student progress and making instructional and intervention adjustments; 5) an emphasis on assessing and ensuring the integrity of the intervention; and 6) regular and systematic screening for the early identification of students whose performance is not responsive to instruction* (Sugai & Horner, 2009, pp. 223-226).

RtI has been approved in many parts of the United States, as it improves the performance of students in both mainstream classrooms and special education settings, providing additional support for students and focusing more on pedagogical activities instead of testing (Hughes & Dexter, 2011; Grigorenko, 2009). In addition, more and more SEN students can then take part in mainstream classroom learning (Grigorenko, 2009).

Yet, RtI has limitations. Although the RtI process helps students overcome learning difficulties, the information for identifying students that need support is not precise (Hughes & Dexter, 2011; Grigorenko, 2009). Since RtI provides only limited evidence of having supported students in upper grades, those in need of developing other academic skills, or those with other special needs, it is best designed for students in the elementary grades and especially those needing help with their reading skills. Accordingly, it seems that RtI ignores those students who perform at an average level compared to other students but underachieve with respect to their own potential. RtI has been criticized for failing to adequately assess underachievement due low social-economic-status instead of learning difficulties. In addition, the information provided by RtI is not combined with other sources of information. Moreover, there are insufficient practices and not enough trained professionals to implement RtI (Grigorenko, 2009).

4.4 Evidence-based, evidence-informed, or best practices?

Over the course of time, various school-based research programs have aimed to improve students' learning and well-being. Depending on the criteria, such intervention programs have been labelled evidence-based practices, evidence-informed practices, or best practices. Despite information that they provide new methods to improve teaching practices, it has proven challenging to apply these new methods in the existing school setting (Nelson & Campbell, 2017). This study introduces three interventions used in a school context. Like so many other intervention studies, this study also had a limited number of participants; so instead of being precise and generalized, the results should rather be viewed as informative.

Evidence-based practices

The term “*evidence-based practices*” (EBPs) originates in the field of medicine. It contains practices and procedures verified by research evidence. Cook and Odom (2013) emphasize the importance of accurate implementation when using evidence-based practices. The crucial contents of such practices include quality, accessibility, and maintenance. In addition, since EBPs originated as a part of medical science, they require scientifically tested methods and programs that significantly impact student outcomes. Differing from other methods, like *best practices*, EBP research must fulfill specific and detailed criteria. Therefore, studies meeting EBP criteria are categorized as having significant outcomes (Cook & Odom, 2013). Accordingly, the empirical and evidence-based practices are then applied in classroom settings to enhance student outcomes and improve the quality of special education (Cook, Buysse, Klingner, Landrum, McWilliam, Tankersley, & Test, 2015; Torres, Farley, & Cook, 2012). EBPs are not a “*cure*” for every student, but when carefully introduced, they can provide an alternative method for learning (Torres et al., 2012). This study does not meet the criteria for EBP research, but there are certain connections. One measure (ASEBA) can be used in settings around the world (*accessibility*). Also, the EASE intervention discussed in this study followed a detailed equine-assisted program in combination with earlier research providing data on its suitability (quality) for SEN students. Torres et al. (2012) have argued that alternative interventions, like the EASE intervention, constitute an additional method to be applied in a special education context in a way that can benefit certain students with special needs, even if not all of them.

Accordingly, since evidence-based practices must adhere to strict implementation criteria, they are not always appropriate for classrooms. Cook, Cook, Landrum, and Tankersley (2008) have identified deficiencies concerning research on evidence-based practices. Evidence-based practices need more precise research methods, despite the important information already gathered through a qualitative research design on teachers' and students' experiences. Thus, a quantitative research design would fill in this gap by offering an experimental research design (Cook, Tankersley, Cook, & Landrum, 2008). Thus, the present study employed

an experimental intervention using a standardized measure consisting of a pre-test, post-test and delayed post-test, with the aim of attaining criteria for an adequate research design.

Although there is a constant need to find new and more effective ways to support SEN students, EBP research programs are often not implemented in a school context. The EBPs require a precise research design and need to be of a high enough quality and with sufficient quantity and effect size to connect the research with practice (Cook et al., 2015; Cook & Odom, 2013; Cook & Cothren Cook, 2011; Cook et al., 2008). Instead of adapting EBP programs, special education practitioners often devise practical techniques based on their personal experience, tradition, and the opinions of experts (Cook et al., 2011), or else they continue to use methods that researchers have deemed ineffective (Cook & Odom, 2013). Therefore, the interventions conducted in this study were implemented in “normal” special education settings, in classrooms and at stable surroundings that served as outdoor education setting. In addition, like other special educators devising their own intervention programs, I had previous experience with equine-assisted programs involving horses, programs that had proved beneficial for SEN students.

One of the problems with EBPs is how to share information about new programs and how to make them known to and implemented by educators. Therefore, a ten-step implementation process for EBPs has been created for special educators. It has clear steps for teachers to follow if students’ responses to “*treatment as usual*” approaches are insufficient and if those teachers are willing to implement EBPs with their students (Torres et al., 2012).

Evidence-informed practices

Schools and educators who implement “*evidence-informed practices*” (EIPs) are important agents in effective school systems. Though these programs would seem to be essential, there is debate concerning how much value should be assigned to such teacher-led research. The practices typically involve small sample sizes, prompting questions about whether they can be viewed as evidence-based practices. EIPs do not just involve activities; they are influenced by personal and professional values and beliefs and affected by broader political and educational contexts, policies, and changes (Nelson & Campbell, 2017).

In response to the growing concern for responding to the needs of all comprehensive students, which has resulted in the three-tiered support system in Finland (Thuneberg et al., 2014), new methods and programs are also being established that experiment with pedagogically appropriate tools (Ahtiainen, Beirad, Hautamäki, Hilasvuori, Lintuvuori, Thuneberg, Vainikainen, & Österlund, 2012). Providing a contrast to the strict criteria of EBPs, the Finnish choice for EIPs leaves space for teachers to maintain their professional autonomy in classroom practices and exclude high-standard testing. Instead of standardized testing, Finnish education is based on diagnostic information that is collected before children

enter school and while they are learners at school. In addition, teachers with “hands-on” experience in administering the tests in classrooms are consulted about them before the final form. Since pedagogical research can support classroom development, teachers are encouraged to connect new information with their teaching practices (Sabel et al., 2010).

The autonomy granted teachers in the Finnish education system provided the space to implement the interventions discussed in this study. Aggression Replacement Training (ART) as an additional, psycho-educational, cognitive behavioral intervention program that aims to improve students’ social skills by dynamically teaching appropriate behavior. This method contains items from cognitive therapy and theories as well as behavioral learning theory. The original version consists of exercises for a ten-week and 30-hour period, to be done in groups. The behavioral part is embedded with the teaching of positive social skills for those who need it (Brännström, Kaunitz, Andershe, South, & Smedslund, 2016; Glick & Goldstein, 1987). Besides introducing ART as an additional intervention in a classroom context, the professional freedom enjoyed by teachers allows them to also include unconventional equine-assisted practices in a school context. Furthermore, this intervention followed a curriculum designed for outdoor education, offering multiple ways to include equine-assisted activities in special class education.

Best practices

Since it is problematic to conduct EBPs and EIPs in a classroom context, educators can use many strategies to support students, known collectively as “*best practices*.” Widely known and practiced by educators, these methods are introduced in this study. However, since these practices are based mainly on external control, they do not meet the requirements for supporting intrinsic motivation.

According to Simonsen, Fairbanks, Briesch, Myers, and Sugai (2008), best practices are practices that teachers apply in the classroom. They include, for example, classroom organization, a structured environment, targeted teaching and supervision, and methods and programs that increase the chances for favorable behavior, and they provide innovative “*opportunities to respond*” (OTR) (Simonsen et al., 2008). OTR is related to academic and behavioral benefits: students are expected to respond to a teacher’s questions or statements (Kennedy, Eisner Hirsch, Rodgers, Bruce, & Wills Lloyd, 2017; Haydon & Hunter, 2011). Another method is to acknowledge and reward students verbally or nonverbally when they exhibit favorable behavior. This practice, called “*behavior-specific praise*” (BSP), is also related to positive academic and behavioral outcomes (Sutherland, Wehby, & Copeland, 2000). Another best practice is known as “*pre-correction*,” a method that models appropriate behavior and prevents undesirable behavior. Favorable behavior is encouraged by stating what is expected of students. Besides

this method having proven effective, teachers have also said that they like it (Kennedy et al., 2017).

5 Research questions and hypotheses

This study defines the characteristics necessary for ensuring the well-being of the SEN students who participated in this study. Considering learning and attention problems as criteria for special class education, five of the seven groups were provided with one of the three interventions described above (EASE, ART, or MATH). The main purpose was to compare the three short-term interventions (two of them being classroom-based programs and one being an out-of-school program). In addition, the intention of the study was to experiment with a unique form of equine-assisted social education (EASE) and describe the program more precisely.

With the frame of reference being social pedagogy, EASE differs from other recreational riding programs targeting SEN students. Applied with attention, respect, and empathy, such human-equine interactions provide aspects important for both human and equine welfare (Fazio, Medica, Cravana, & Ferlazzo, 2013). As such, this EASE program improves interactions and co-operation with horses as co-educators in stable surroundings.

When implementing and documenting these interventions and assessments, the teaching and learning components were based on the 2004 national core curriculum for basic education and local curriculum devised in 2007. The local curriculum comprised such values as “being resident- and client-oriented,” “tolerance and equality,” “creativity and innovativeness,” “partnership and sense of community,” “productiveness and effectiveness,” and “sustainable development” (Local curriculum, 2007). By conforming to typical Finnish features “allowing teachers to establish new ideas and techniques” (Sahlberg, 2007), the three interventions were created to enhance the well-being of SEN students in regional special classes.

Before presenting results related to the outcomes of the actual interventions, the first two sets of analyses describe the target group and its well-being and the role of animal contacts. In addition, previous research outcomes indicate that equine programs could be beneficial for certain areas of well-being. Thus, based on the overall aim of this study and previous research, the following research questions and hypotheses were created:

School success

Q1.1: Are the views of SEN students, their parents, and their teachers concerning the students' school-related success related?⁶ Further, is students' relation with parents connected with SEN students' school success?

H1.1: Students' close relations with their parents (Wentzel, Russell, & Baker, 2016; Seppala, Rossomando, & Doty, 2013; Updegraff, Thayer, Whiteman, Denning, & McHale, 2005), as well as parental interest in their children's schoolwork, is related to school success (Flouri, 2006).

Q1.2: Was there a connection between how much time students had already spent in a special education class and their conceptions of school success (in mathematics and Finnish)?

H2.1: The shorter the stay in a special class, the better the student's success, since SEN students have better school success if they have studied in a mainstream classroom (Shifrer, 2013).

Q1.3: Was there a connection between school success (mathematics and Finnish) and how many friends the SEN student had?

H1.3: The number of friends is related to students' school success (Nelson & DeBacker, 2008).

Well-being

Q2.1: Did students, their parents, and their teachers have similar opinions regarding the students' well-being? Were there differences in well-being between boys and girls?

H2.1: Since parents know their children quite well, the parents and students share similar opinions regarding students' well-being. Adolescent girls are more depressed than boys (Hagborg, Tidefors, & Fahlke, 2017), so well-being is associated with gender (Bluth, Campo, Futch, & Gaylord, 2017).

Q2.2: Was there a connection between well-being and the number of years that the SEN students had been in a special class?

H2.2: The well-being of seventh-grade girls, namely concerning withdrawn-depressed symptoms and anxious-depressed symptoms, is not lower than that of boys or third-grade students (Bluth, Campo, Futch, & Gaylord, 2017). Younger students benefit more from interventions (Hattie, 2008; January et al., 2011; Schultz et al., 2007), so the well-being of third-grade

⁶ Students' real school success was not measured in this study. The data on school success consists of ideas and beliefs regarding the students' abilities compared to those of their peer group.

students is better than that of seventh-grade students after special class placement as a pedagogical intervention.

Q2.3: Was there a connection between well-being and SEN students' social relations (family and friends)?

H2.3: Since girls are more empathic than boys (Daly & Morton, 2006), social relations (connections with parents, siblings, peer group and students' close friends) affect students' well-being differently depending on their gender. In addition, students who have good relations with their siblings are less aggressive (Updegraff et al., 2005).

Q2.4: Was there a connection between well-being and SEN students' participation in free-time activities?

H2.4: Despite the fact that well-being improves by participating in weekly sports (Merglen, Flatz, Bélanger, Michaud, & Suris, 2016), structured leisure-time activities are connected to well-being only with emotionally healthy students (Trainor, Delfabbro, Anderson, & Winefield, 2010).

Three short-term interventions and their outcomes

Q3.1: Does the well-being of SEN students benefit from a short-term intervention?

H3.1: An additional program could benefit students' well-being by decreasing aggressive behavior and increasing attention as well as social relations with their peer group (Berry, Axford, Blower, Taylor, Edwards, Tobin, Jones, & Bywater, 2015). Programs designed to improve social skills have short-term benefits (Hattie, 2008).

Q3.2: Were the intervention outcomes related to the intervention program?

H3.2: EASE as an outdoor education program has positive effects (Hattie, 2008), and it is more effective than ART or MATH, which are programs based on discussion or academic instruction (January et al., 2011; Trotter et al., 2008). EASE decreases aggression (Ewing et al., 2007; Kaiser et al., 2006).

Q3.3: Were the intervention outcomes related to the students' (with special needs) gender?

H3.3: There are only minor differences in outcomes based on the students' (with special needs) gender (Hattie, 2008), adolescent girls are more depressed than boys in the same age group (Bluth et al., 2017), and there is no difference in locus of control based on students' (with special needs) gender (Chubb & Fertman, 1997).

Q3.4: Were the intervention outcomes related to the students' (with special needs) grade in school?

H3.4: Interventions more strongly affect third-grade students than seventh graders (Hattie, 2008; January et al., 2011; Schultz et al., 2007). Locus of control becomes less external as students grow older (Chubb & Fertman, 1997).

Data for research questions concerning students' school success and well-being were collected in pre-test. Further, data concerning intervention outcomes included pre-test and post-test data, since delayed post-test data was available only with control groups. By determining the efficacy of these optional 8-week interventions for SEN students, this study provides information for well-being programs for schools and teachers.

6 Method

This chapter gives an overview of the methodological issues and research design of the study. In addition, it describes the participants, instruments, data, and analytical process. Like many studies, this research study was designed to shed greater light on the researcher's own specific area of interest. Considering that the researcher's passion for the subject might influence the desired results, the outcomes were assessed with prudence. The aim of this study was, as with all case studies (Mills, Durepos, & Wiebe, 2010), to test new teacher practices and choose appropriate tools for students' well-being and effective learning.

Scientific research provides valuable techniques for actively exploring phenomena and structures of the world on a social level. Machame (1998) has stated that scientific knowledge is the most important intellectual achievement constituting the modern world. In addition, the interpretations provided by science connect how researchers interpret their observations with how participants interpret their reality (Raatikainen, 2005). The values and beliefs held by researchers and participants can, though, create preconceptions about the phenomena under study (Cohen, Manion, & Morrison, 2011).

6.1 Mixed methods approach with concurrent nested design

Numerous studies have been done in the behavioral and social sciences using both quantitative and qualitative methods. Studies use a mixed methods approach when integrating both procedures. The purpose of a mixed methods design is to collect and analyze data, integrating the results using both quantitative and qualitative procedures and methods in a single research study. Such studies involve two kinds of research questions and procedures for sampling and collecting data. Further, the data can include both word-based and numerical and analytical processes consisting of both thematic and statistical methods. Moreover, such studies draw two kinds of conclusions, subjective and objective conclusions. Pragmatism, as one philosophy, is highly valued and often used in a mixed methods design (Tashakkori & Creswell, 2007).

Through concurrent nested design, both quantitative and qualitative data are collected at the same time and compounded when performing the analysis. This mixed-methods strategy is used when information is needed for a broader perspective on a topic. Likewise, qualitative data may be used to describe specific features of the quantitative data, and the other way around. A concurrent nested strategy has many advantages. Various types of data can be collected at the same time, and conclusions can account for different perspectives. However, there are

some difficulties in utilizing this method. Some data needs to be transformed before being integrated when analyses are performed (Creswell, 2003).

Multiple case study

Case studies involving various implementations are recognized as a suitable research method whenever the focus is on an exceptional teaching program, especially for the students with specific needs. With a case study approach, educational practices can be monitored using a mix of quantitative and qualitative methods to obtain results from various perspectives. If the results show that the implemented program is ineffective, then a case study with a mixed methods design can clarify why it proved ineffective (see Mills, et al., 2010).

This is a multiple case study with various sources of information, case-based themes, and descriptions, one that combines a mixed methods approach with in-depth data collection. A multiple case study concerns a context-bound reality, one that can only be comprehended by persons participating in the research. Instead of isolating the facts, the data consists of facts identified and interpreted as important by those who participated in the events. The aim of the multiple case study was to understand and describe this level of subjectivity by connecting the research objective with the research subject (Pauwels & Matthyssens, 2004).

In a prior study, Stake (2006) recommended that multi-case studies should have four to ten cases, and with that in mind the current research project included four (interventions), each with two groups (though only one group for co-operational mathematics). The four interventions thus yielded similar results with respect to their impact on student well-being. This study gathered data from students, parents, and teachers via surveys. The interventions were closely observed and documented (see Mills et al., 2010). The methodology was a multiple-case study design using a mixed methods approach (quantitative data, diaries recording observations, and qualitative texts).

Stake (2006) has suggested that a multi-case study should also focus on each case separately. A case study approach proved beneficial when the focus was on developing an effective teaching practice: in addition to improving understanding and knowledge of the issue, they also defined favorable practices the multiple methodologies also offered researchers a flexible way to identify possible aspects that promoted change. However, this approach also required access to adequate resources, like time, money, knowledge, and experience. Yet, we compensated for the smaller sample size by using targeted sampling, with the results proving statistically meaningful. Likewise, a small sample size provided natural reasons for more detailed research (Mills et al., 2010).

Similarity is a fundamental requirement of multi-case studies (Stake, 2006). In this study, the cases (groups) resembled one another in that each focused on special education students and interventions comprising peer group activities. Stake (2006) has noted that in multi-case research, the main goal is something

other than just documenting participants and how they function. Despite closely observing the students, their actions were not the main objective of this study. To qualitatively understand the cases and activities, the researcher must take part in the activities and experience them in the same context with each group. This study chose participants from five schools, each with its own school culture, in a single municipality. If the school cultures differed, then results of these intervention programs might also appear ineffective (Mills et al., 2010). The anonymity of the participating schools, teachers, and students had to likewise be maintained.

Theoretical sampling, triangulation, the logic of matching patterns, and analytical generalizations constitute the four pillars of multiple case study research. Though the number of cases is not important for a qualitative assessment of multiple case studies, the theoretical approach should address how the sample was chosen. Triangulation helped increase the internal validity by integrating a multi-method design with various data. This procedure compensated for the weakness of one dataset or method by including another dataset or method. The purpose was to affirm the results and to ensure that the phenomenon under study combined the sources and methods in an applicable manner. The pattern-matching logic consisted of events that were predicted via our hypotheses. The process focused on relationships between abstracted events. Further, the researcher needed to decide if causal relationships could be realized outside the sample. Using analytical generalizations, the researcher was able to indicate whether certain outcomes agreed with existing theories or needed further investigation (Pauwels & Matthyssens, 2004). Triangulation was performed in this study in three ways: by *combining disciplines* (special education, anthrozoology, and psychology), by *utilizing methodological triangulation* (collecting data through observations and various instruments), and with *data source triangulation* (having two persons document observations).

6.2 The position of this study in the field of philosophy of science

This mixed method multi-case study originated from my practical curiosity about the connection between SEN students and enhanced well-being after taking part in equine-assisted programs. During my special teacher career, I had experienced the change in students' behavior when they interacted with horses. Since study of this phenomenon required multifaceted methods, I identified several philosophical approaches that met the criteria for this study. Quantitative methods with determined procedures and standardized questionnaires served as the main data source. Since the aim was to explain connections, this study is related to positivism. Yet, it differs from logical positivism by focusing on human well-being and interventions, which are supposedly interrelated. In addition, unlike with

positivism, this study involved theoretical reasoning, that is, estimating possible effects using hypotheses as “educated guesses.”

Human studies aim to understand participants by interpreting their inner life, for instance by adopting another student’s viewpoint, using empathy, or assessing participants’ thoughts and experiences (Raatikainen 2005). Referring to Cohen et al. (2011), human nature and behavior have no universal or general laws. In other words, the social environment surrounding an individual can only be understood by the autonomous persons who were a part of it. Likewise, a person’s behavior can only be understood by those observers who shared the same frame of reference, meaning that the observer must be within the same social environment to make correct interpretations. Thus, this kind of dualistic philosophy of science emphasizing an interpretative and understanding approach was conducted by documenting observations concerning equine-assisted social education. This exercise was realized in this study by my own participation in all interventions, which provided me with the opportunity to know each participant and observe their behavior during intervention sessions. Instead of choosing methodological dualism,⁷ with personal time allotted for each participant (e.g., interviews with opportunities to understand their individual perspectives), this study actualized methodological monism⁸ based on the assumption that a natural science approach could be implemented when working with human studies (Raatikainen 2005). In other words, some outcomes were interpreted based on observations, resembling empiricism, but because of the small sample size, the results were not generalized as with pure empiricism (Machamer, 1998).

Like Cohen et al. (2011) have noted, educational research has both a theoretical and practical purpose, since it is linked with educational politics and decision making. Therefore, this study also has a pragmatic approach, with the mission being to use interventions to shed more light on well-being issues. How though do we measure the connection between the interventions and students’ well-being, and whether it could be measured at all? Since the study context lent itself to neither solely a quantitative nor a qualitative approach, a mixed methods design provided the best method for this study (Cohen et al., 2011). Thus, such issues as how the participants experienced the equine-assisted education sessions (participants’ feelings and emotions) were documented in intervention diaries. Notably, unlike with inductivism and classical empiricism⁹ (Raatikainen, 2005), the results of this study cannot be generalized because they are evidence-based findings covering

⁷ Since human studies differ from the natural sciences via the meaning of understanding approach, human agents were examined from their own perspective (Raatikainen 2005,).

⁸ Human studies benefit from the methodologies utilized in the natural sciences (Raatikainen 2005).

⁹ Inductivism and classical empiricism both presume that inductive reasoning can be used to make generalizations based on individual observations without any prior theoretical assumptions or hypotheses (Raatikainen 2005).

all special needs students with learning problems; hence, it is best to say that the study provides valuable evidence-informed results.

Common-sense reasoning and knowledge set limitations on all studies. The way things have been done for years or personal experiences can cause a *blind effect*. These personal experiences, known as common-sense knowing, are often called into question when compared with a more scientific approach (Cohen et al., 2011). I had a personal connection with all three interventions, so I had to acknowledge this position when the outcomes were being evaluated and interpreted. I have a background as an equine-assisted social education practitioner, working in the field for as long as it has existed in Finland. Additionally, also being an ART instructor, I was aware of the possible effects. I was trained to use co-operational methods in my early years as a class teacher. Therefore, in the field of philosophy of science, this study comes closest to that of relativism, which emphasizes my own position and the relativity of knowledge afforded by this position. At the same time, this study is also close to phenomenology, emphasizing knowledge acquired through my own observations and experiences.

6.3 Research design

This doctoral dissertation is a multi-case study. According to Creswell (2003), in case studies the researcher studies an event, a program, a process or one or more persons at a deeper level. The data was collected using multiple procedures and instruments to investigate whether pedagogical interventions positively impact students' well-being. The study included three testing times: a pre-test, a post-test, and a delayed post-test. The main data used in the study consisted of quantitative questionnaires with several additional qualitative, open-ended questions. Additional material included a diary chronicling the EASE intervention kept by the researcher and assistant and plans for each intervention session.

The original idea was to have two groups for each intervention to obtain information about students in transition periods. Also, it was necessary to acquire an adequate number of participants to meet the obligations for data analysis. Thus, participating groups were divided into treatment groups or control groups. The intervention treatment groups (EASE, ART, and MATH) had eight-week programs, lasting for approximately 90 minutes a week. The control groups (TAU, treatment as usual) did not receive any additional interventions and continued their daily special class education during the eight weeks, while taking part in the pre-test, post-test, and delayed post-test measurements.

These eight-week informal learning interventions were provided for two hours a week. The intent of the interventions was to actualize the learning targets prescribed in the national curricula. One primary objective was to support students' curiosity and motivation to learn, as well as to promote their activity levels, self-regulation, and creativity by providing interesting challenges. Teamwork (EASE,

ART, MATH) and extraordinary learning environment (EASE) exercises helped improve interactions between the teacher and students and student-to-student interactions. All participants took part in the exercises and were encouraged to maintain an open, encouraging, calm, and positive school ethos (FNAE, 2004).

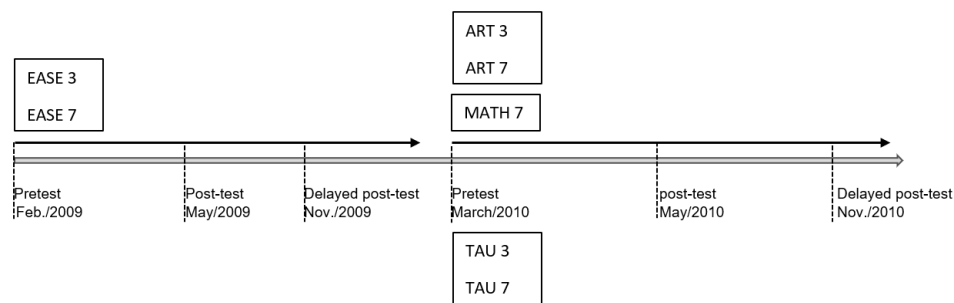


Figure 4

The research design of this study that investigates pedagogical interventions in three settings: equine-assisted social education “EASE” (a social skill program in stable surroundings), Aggression Replacement Training “ART” (a social skill program in classroom setting), and co-operational mathematics “MATH” (an academic program in classroom setting). In addition, two groups remain control with treatment as usual, “TAU”.

Since several groups from different schools were involved in this study, and the researcher needed to visit each group to conduct the interventions, the choice of school was based on location and access to public transportation. Moreover, the EASE 3 and EASE 7 groups needed to be able to easily access public transportation when travelling from school to the stable and back to school again. As a result, both equine-assisted social education groups (EASE 3 and EASE 7), as well as the ART 7 group, were selected from the same school.

Before sending an application to school authorities, each principal was contacted personally and informed about the study. Program details were described: how it would be implemented, how much time would be needed, and whether any other benefits might be derived from participating in the study. The EASE groups were provided with public transportation tickets, while the other groups received 150 euros for class trips after the delayed post-test. Having received permission from school authorities for the study, we met with each group, special class teacher, and school assistants. The researcher introduced herself and described the intervention program procedures, consisting of eight weekly meetings. Students and teachers were asked questions during these visits. In addition, each teacher was provided with a binder explaining the study, including a timetable for conducting measurements, the teacher’s duties during this process, and a letter to be delivered to students’ parents. These loose-leaf folders were delivered three times following the scheduled measurements.

Students and parents were invited to participate in this research project in a letter sent by the teachers to each student's home. Thus, besides the school authority's approval, students needed his/her parents' permission to participate in the study. At the time the data was being collected, the students' own agreement was not required. Besides the letters containing information about the nature of the research, the letters sent to parents included a return envelope and the agreement to be signed. They were thus offered the option to either permit or refuse to let their child to be part of this study and to volunteer or refuse to attend the sessions themselves. Since the interventions were part of the students' school day, students who did not participate in the study took part in other activities.

The interventions in this study were implemented in two different learning environments. The EASE intervention was implemented in stable surroundings, while the ART and MATH interventions took place in a classroom environment. In addition, the TAU control groups also remained in the classroom environment. Familiarity with their school and classroom allowed students to feel safer at the beginning of the interventions. Since the person conducting the ART and MATH interventions represented the only perceptible change compared to a normal lesson, these students remained in the same "roles" within their group. In contrast, the stable surroundings provided students with elements not usually encountered in the classroom. Students had the opportunity to demonstrate new strengths when handling horses, demanding the kind of courage and patience not visible at school. Teachers and adults also assumed new roles when they shared in activities, like grooming horses, with students. This also enabled direct and close contact and dialogue with students. Instead of remaining at a desk, students could move around and become engaged with hands-on activities that were accomplished with the whole group. Alternatively, the stable environment proved challenging for students who were fearful of unfamiliar places and unexpected situations. They needed adult support at the beginning.

This chapter provided information on the methods and approaches of this study. The main interests for this dissertation were presented as research questions focusing on well-being, but also with the aim of addressing academic, behavioral, and family-related issues. Hypotheses were also introduced to guide the process and provide frames for it. In addition, participants, and the criteria for their selection as well as their background information were provided. Instrumentation of the study offered both the methods and procedures, including the interventions, together with their content, data collection process, and how they were analyzed.

Special education setting

The interventions were conducted in southern Finland during the years 2009–2010. At that time, ongoing preparation for legislative reform was widely being discussed and new methods being introduced. More than 10% of comprehensive education students in the chosen municipality received special needs education in

diverse ways at the time of the study (table 6.1). Learning practices and the teaching of SEN students were organized depending on the students' needs and capabilities. Students received special support as integrated students in a mainstream class, special support in a special class in a mainstream school, or in a special class in a special school. Despite the different settings, all students had compulsory individual learning plans.

Table 3. Statistics from 2008–2010 on students with special needs in the municipality where the interventions were implemented (unpublished data: pre-primary and comprehensive school education statistics)

	20.9.2008		20.9.2009		20.9.2010	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
students with special needs in special class	1 556	6.4	1 609	6.6	1 572	6.5
students with special needs in mainstream	1 102	4.5	1 237	5.1	1 276	5.3
all students with special needs	2 658	10.9	2 846	11.7	2 848	11.8
all comprehensive education students	24 319	100	24 236	100	24 153	100

6.4 Implementation of interventions

The interventions followed national and local curriculum guidelines, together with additional activities designed to provide cognitive and emotional support for student's well-being. The interventions and data collection process were accomplished during two school years, 2008–2009 and 2009–2010, between February 2009 and November 2010. In the beginning, there were six intervention groups and two control groups. During the pre-test, the MATH 3 group discontinued the study: the special class teacher said that students found the Achenbach's instrument (Youth Self Report) too difficult to complete.

Teachers were provided with directions both in face-to-face meetings and via written instructions and timetables. Each test was to be carried out in a group testing session by a special class teacher according to these guidelines and timetables. Since the participants were students with learning problems, teachers were advised to read aloud every question (statement), one by one. If students had questions or doubts, teachers were advised to address them before letting students answer a question and move on to the next question.

The main researcher possessed the competence and training for all intervention programs (EASE, ART, and MATH). In addition to teaching and leading the interventions, the researcher also monitored students' and adults' actions during various situations so as to eliminate the effect of the instructor's personality. This caused a scheduling problem, though. As a result, the interventions took place

during two school years (2008–2009 and 2009–2010), beginning with the EASE interventions in spring 2009.

The EASE and ART interventions were chosen for this study since they both contain elements designed to improve social skills and life-skill competence. The MATH intervention is an academic intervention promoting social interaction. Since all interventions comprised social and relational features with autonomous support, it was interesting to ascertain whether these kinds of activities are associated with positive outcomes (see Wallace & Sung, 2017).

6.4.1 Equine-assisted social education (EASE)

In this study, the EASE intervention included the combination of a social pedagogical framework and equine activities based on *EPIC training: treating at-risk youth and adolescents with equine-assisted counseling* (Trotter, 2008). The activities shared similarities with gestalt therapy, emphasizing body language and its importance for exercises. The equine activities involved exercises with similar goals as those emphasized in the national curricula. Combined with the basic groundwork on how to approach horses and the objective of enhanced communication between participants, these activities supported interaction, curiosity, problem solving and teamwork. Each activity had a specific objective, like better communication or facilitating group behavior. In other words, the goals could not be achieved individually, but rather were accomplished when the whole group worked together collectively (considering every participant's actions and needs).

EPIC training was originally implemented in Texas, an environment quite different from that of a northern country, meaning that the activities had to be adjusted to fit the Finnish culture and a winter setting. In addition, the equine sessions were reduced from twelve to eight meetings. The themes addressed in each session are listed in table 4.

Table 4. Weekly objectives and methods included in the EASE program

Week	Objective	Method
1	team spirit; knowing each other	meeting horses and stable staff, observing equine behavior, and herd dynamics, learning equine communication
2	respect; self, others, horses	groundwork with horses (direct and indirect pressure)
3	communication; verbal and nonverbal	groundwork with horses (leading them, interpreting equine communication and 'language')
4	leadership; assertive and aggressive cues	groundwork with horses (driving activity using body language)
5	trust; coping with stress	groundwork (leading) and mounted activities with horses (horseback riding)
6	boundaries	groundwork with horses (driving activity with indirect pressure)
7	confidence; overcoming challenges	groundwork (leading) and mounted activities with horses (horseback riding)
8	Competence; being proud of own skills	groundwork (leading) and/or mounted activities with horses (horseback riding)

The adults had agreed roles and duties. The special class teacher organized weekly “class trips” to the stable. The teacher was also responsible for packing the lunches, for arranging public transportation, and for keeping up with the schedule. In the stable surroundings, the teacher and school assistant were responsible for documenting the exercises by taking pictures. They observed the activities and provided personal support for students, if needed. The researcher’s duty was to plan and organize equine activities and take care of security concerns. These responsibilities were carried out together with a trainee from a Bachelor of Social Services degree program. She was competent at working with horses, which was a necessity with three horses involved in the activities.

All equine sessions began with the same procedure. First, all students and adults were invited to form a circle and participate in a “roll call.” Despite the fact that the original EPIC manual recommended giving participants “ranch names,” during this intervention all participants were called by their real names. After the roll call, the instructor repeated guidelines for the stable activities. Furthermore, specific rules for equine activities, called “a five-finger contract,” were also reviewed. After this, one or two warm-up exercises without the horses were carried out to motivate students and improve their concentration (picture 1).



Picture 1. Tasks and activities required group co-operation for their successful completion.

For example, the first equine session continued with “a group juggling exercise.” Participants stood in a circle. The instruction threw a ball in a manner that everyone touched it only once during the round. This procedure was repeated for two rounds. For the third round, surprisingly an extra ball was added for the juggling exercise. The purpose was to make students pay attention to their surroundings. This exercise showed how the students react to unexpected situations and how they concentrate on tasks, a necessary task before involving horses in the activities.

It was vital to address the security questions before the horses and special students began working together. The instructor informed students about how to safely and properly communicate with horses. To facilitate understanding, the students walked around the stable surroundings to the fence and observed the horse herd and its behavior. Then, it was time to tell students about the horses in more detail: their names, backgrounds, relationships to teach other, personalities, and other characteristics. Students were asked to observe how horses communicate with each other and what kind of information they were “reporting” (pictures 2 and 3).



Picture 2 and picture 3. Each student preferred working with one specific horse.

Two horses and a pony participated in the equine activities. They were all trained for such activities and were rather small. When the horses heard the EASE groups approaching, they gathered at the gate to welcome the students. The oldest horse was an 18-year-old Finnhorse gelding. Despite the focus of the breeding being harness racing, he had never been trained as a trotter. The Shetland pony gelding was 106 cm high at the withers. Since he was small, only two students from the 3rd grade were light enough to ride him. With the other 3rd graders and 7th graders, this pony participated only in the groundwork. The only mare in this herd was a 16-year-old Norwegian Fjord Horse. The Fjord Horse and the Finnhorse had calm and curious personalities, so the students were able to work with them quite independently. The stubborn little Shetland pony needed an experienced adult to be at its side all the time to support students' handling of it.

The EASE program embraced elements designed to improve students' protective factors and resilience, setting of clear boundaries, interaction, love and support, and humor (pictures 4 and 5).



Picture 4 and picture 5. The EASE intervention involved activities that involved interaction and provided support.

During equine activities, the students practiced controlling their temperament and learned new skills together as a group. Furthermore, the stable offered surroundings with clear boundaries. All the guidelines gave reasons for why they existed. If instructions were not obeyed, then horses might get nervous and act up.

6.4.2 Two other interventions and control

Despite the EASE method as the focus in this study, the other two interventions (ART and MATH) were implemented with the same amount of time and similar goals than EASE.

***Aggression Replacement Training*® (ART)**

The ART intervention is a psychoeducational method for helping individuals with a deficit in pro-social behavior. It provided appropriate training via three elements: skill streaming, anger control, and moral reasoning (Calame, Parker, Amendola, & Oliver, 2011).

The ART program had been used extensively to replace disruptive behavior by teaching desired behavior. Originally, ART was a ten-week program consisting of three hours a week of instruction. It uses similar techniques as cognitive and learning theories. Like Bandura's social learning theory, which replaces undesirable actions with desirable behavior, the ART program also focuses on improving behavioral skills within groups. Some studies have indicated that ART served as an effective intervention for antisocial adolescents and adults, leading to positive outcomes with respect to anger control, social skills, and moral reasoning. However, it does not always yield reliable post-test and delayed post-test results, making it difficult to formulate broad-based generalizations about the treatment (Brännström et al., 2016).

In this study, all ART intervention sessions had the same structure. The same components were repeated each time, regardless of the social skill being taught. The social skills being addressed were similar to those addressed in the EASE intervention (table 5).

Table 5. Weekly objectives and methods included in the ART program

Week	Objective	Method
1	team spirit; knowing each other	practicing social skills (how to introduce yourself)
2	building sense of community	practicing social skills (how to ask for help)
3	self-esteem and leadership	practicing social skills (how to make own decisions)
4	influencing others	practicing social skills (how to impress others)
5	finding solutions	practicing social skills (how to keep focus on tasks)
6	observing own and others' feelings	practicing social skills (how to involve and notice everyone)
7	communication	practicing social skills (how to start a discussion)
8	self-confidence and competence	practicing social skills (how to take responsibility)

In the beginning of each session, the new social skill was introduced, named, and written on the blackboard. Then, after providing an overview of the skill, students were asked whether they recognized this skill as applicable to and important in their lives. This question was asked to motivate students to learn the skill if they thought they could use it or need it in their daily life.

This was followed by a request to identify situations where this skill would prove beneficial or useful for them. All examples provided by the students were written on the blackboard. The next action was to divide that skill into separate components. These components were demonstrated both visually and orally by adults. Then, the skill was modeled in a daily situation by adults (instructor and teacher). The Adults had thought of a situation beforehand that applied to the students' daily life. While the adults demonstrated a situation requiring this new skill, students were asked to identify the components of this skill. Students were also requested to observe if the adults touched upon all components of the skill. The adults then held a discussion involving themes like why it was important to be clear about one's actions and the role of nonverbal communication. At the end of the session, students practiced this skill in groups (three students per group). The original ART program provided assignments to be done at home with parents, but this step was skipped in this intervention.

Co-operational mathematics (MATH)

The MATH approach addressed important math-related themes. The idea changed after meeting with the special class teacher and based on concerns about the students' mathematical competence. Since students were deficient in the mathematical skills required to meet seventh-grade demands, the teacher hoped this

intervention would concentrate on practicing basic mathematical skills that were taught during the primary school years. This desire was acknowledged in the intervention plan (table 6).

Table 6. Weekly objectives and methods included in the MATH program

Week	Objective	Method
1	team spirit; knowing each other	working in pairs (paper, and pencil), addition, subtraction, and problem-solving
2	learning together	working in pairs (computer, paper, and pencil), multiplication and division (digital bingo)
3	learning together	working in pairs, digital learning (computer, paper, and pencil), decimals, comparisons, rounding, playing mathematical games with dice
4	learning together	working in pairs and/or groups, digital learning (computer, paper, and pencil), addition, subtraction, multiplication, and division
5	learning together	working in pairs and/or groups, digital learning (computer, paper, and pencil), percentage, connection between percentage and decimals
6	learning together	working in pairs, digital learning (computer, paper, and pencil), multiplication, division, order of calculation, number line play
7	learning together	working in pairs, digital learning (computer, paper, and pencil), equation
8	learning together and closing the program	working in pairs, digital learning (computer, paper, and pencil), equation, 'farewell-treats'

To practice basic mathematical skills, the students were not allowed to use their books. Instead, specific material following the plan was devised for students. This material was sent by email to the school assistant, who copied it for students before each session.

The first session began with an attendance check by name. Then, students were placed in three groups, with three students in each group. The first problem-solving task was called “row the wolf over the river.” Groups needed to find a secure way to transport certain animals across a river without any of them being eaten by the others. The purpose was to motivate members of the group to communicate with each other and try different types of techniques to solve the problem together. Students were provided with paper and color pencils and encouraged to draw, talk, and use their imaginations to solve the task. The problem-solving assignment was followed by mathematic operations. When students were instructed to continue teamwork in groups, they needed adult support to work together and communicate on the mathematical assignments. Working together to solve the mathematical tasks proved more difficult for them than communicating on the previous problem-solving task. There was one computer in the classroom, and students used digital learning from the second lesson until the end of the intervention. Groups

and pairs had to take turns with the computer to ensure that each student had access to the digital learning tasks.

In addition to providing training in basic math skills, the intervention encouraged teamwork and solving mathematical tasks together with others. The purpose was to provide students with experiences of empowerment through collective group work: to find answers together and not exclude anyone when struggling with the answers. Learning methods included working in pairs and groups, mathematical games, and computer-assisted learning. Students had permission to move around the classroom. Since the mathematical games, problem-solving tasks, and other assignments were spread throughout the classroom, students had free choice regarding the order in which they preferred to accomplish them.

Treatment as usual (TAU)

Two groups served as control groups. They did not participate in any additional interventions during the research period. This point was discussed with the teachers early on in the study. Both TAU groups were located in the same school district, but in separate schools. The groups and teachers met with each other before the pre-test. Students were told about the study and their part in it. During those visits, the researcher made some observations. Both groups had orderly and tidy learning environments, with organized places for materials that students could easily find. Also, pedagogical relations between the teachers and students seemed warm and appreciative. That first impression increased when teachers described their group of students in a positive manner.

6.5 Data

The data used in the study primarily consisted of quantitative material collected three times from students, parents, and teachers. Teachers were advised to complete questionnaires giving precise dates for the pre-test before the intervention and the post-test immediately after the intervention. The delayed post-test was given six months after the post-test. Since the EASE groups participated in interventions a year before the others, this data was collected in 2009. The TAU groups had the same scheduled assessments as the ART and MATH groups, in 2010. To control this precise timing for assessments, the teachers were provided with binders at that time for testing.

In addition to specific assessment times, teachers were guided in how to instruct students to complete the questionnaires during school hours. According to the written guideline, teachers should begin with the human/pet relationship measure (Siegel, 1990), as it was the easiest and quickest for students to complete. Since all the students had learning problems, teachers needed to read and explain the questions first, one by one, and then let students answer them synchronously. The order for the questionnaires was as follows: 1) human/pet relationship

measure (Siegel, 1990); 2) youth self report (Achenbach, 1991); 3) empathy measure (Davis, 1980); 4) aggression measure (Buss & Perry, 1992); 5) loneliness measure (Asher, Hymel, & Renshaw, 1984); and 6) locus of control measure (Nowicki & Strickland, 1973). In addition, teachers were asked to document students' comments and their own observations in diaries with precise dates. Despite the overall research aim, it was understandable that teachers had no time for this extra work while tending to their other daily routines.

The only additional qualitative data was the diary entry written after each EASE session. It contained both the purpose and plan for the EASE session, with observations and reports on what had happened. These notes were written by the researcher and assistant. First, our own observations and experiences were written individually right after the session. After that, we discussed the two sets of notes and completed a final version of the diary.

6.5.1 Schools

Altogether, five schools were selected to participate in this study. The schools were located in three regions out of five in a single municipality. All the schools were Finnish-speaking comprehensive schools.

School 1

Three intervention groups, EASE 3, EASE 7 and ART 7, came from the same school. The school consisted of a pre-school and grades 1–9 and was located in the center of one region. School had many students with Finnish as second language. Accordingly, the school provided preparatory education for those students who had just arrived in Finland. Also, in addition to providing special education for those with learning problems, it also included special needs groups for severely handicapped students.

The EASE 3 group had one special class teacher and two school assistants when the intervention began. Since many daily incidents occurred between the students in the group, the adults had to teach the students better behavior and were responsible for their security. Before these students visited the stables for the first time, the school had provided information about the daily fights at school, just we could be prepared. Some students needed to have several cases resolved by the school mediation program (VERSO-ohjelma, 2018). All parents gave permission for their children to participate in both EASE programs in this study.

The EASE 7-group had a special class teacher, but a school assistant service only for the first two sessions of the intervention. During EASE sessions the teacher took pictures and participated by offering students emotional support. Altogether, nine students took part in the equine program, but only eight students had received permission from their parents to participate in this study. Nevertheless, the ninth student participated in every stable activity since all students and

parents had been told that participation in the study was voluntary. Only three students were at grade level based on their age, while the other five were a year older. This group did not take part in the human/pet relationship assessment, but, according to teacher, none of the students had pets at home.

As was the case with the EASE 7 group, the ART 7 group also had at the beginning both a special class teacher and school assistant service working with the group during the intervention. As the intervention proceeded, the school assistant began to work with another group in the school, after it became evident that she was not needed as much with this group. The teacher was actively present during the intervention. She co-taught and modeled the social skills with the researcher and also tried to motivate students to engage with the activities, which was at times quite hard.

School 2

The ART 3 group came from an elementary school consisting of a pre-school and grades 1–6. This school was quite new in the municipality and focused on integrating special groups with mainstream groups, meaning a class teacher and special class teacher co-teaching in the same classroom. They co-taught and co-planned everything. Consequently, the ART intervention introduced some changes to their weekly program, as mainstream students did not participate in this program. In addition to the special class teacher, two school assistants also worked with this group. During the intervention, the special class teacher co-taught and modeled social skills and situations with the researcher.

School 3

The MATH 7 group came from a middle school consisting of grades 7–9. This school offered a special class education for those with learning difficulties and flexible basic education for those students who find it difficult to be engaged in school and would more likely practice school subjects in other environments. Only a few students had a language other than Finnish as a mother tongue. One student received individualized math instruction. Still, she was subject to the same procedures and had the same materials as the rest of the group. The special class teacher remained as an observer during the intervention sessions, but the school assistant co-operated with me. She organized materials (copying, making material available, and so forth) and acquired plans for the next session. Likewise, she was provided with “key answers” to the assignments; thus, she was the other adult able to support students in completing the mathematical tasks done in pairs and small groups.

School 4

This school was located in an area that included a high percentage of students with Finnish as a second language student. The school had a long history of providing

special class education to students with learning difficulties. However, almost all the TAU 3 participants had Finnish as a mother tongue. The group also included twins. One of the students had delayed starting school, having been in separate a “start group” for a year after pre-school. The special class teacher worked with the school assistant, who assisted the group based on the pre-arranged schedule. I met with this group once beforehand to get to know them and talk with them about the research design. After completing the delayed post-test, they received a one-day stable visit as a reward.

School 5

The last school, the home school for the TAU 7 group, consisted of a middle school and upper secondary school. Both focused on science and mathematics. The school had three special groups for students with learning problems. It only had students with Finnish as a second language. There was a special class teacher and part-time school assistant in the group. As this school was ahead of the curve in digital learning, the TAU 7 participants also engaged with several subjects using digital devices.

6.5.2 Participants

This study involved regional special classes. Most of the students had learning problems. Participants included special class students in the 3rd and 7th grade, their teachers, and their parents. All of them were provided with questionnaires. Five of the seven special classes participated in the interventions. The other two groups were controls, which received treatment as usual. The two grades, third grade and seventh grade, were chosen because they involve transitional elements: 3rd grade represents a transition from early school years to “more subject-based” teaching, while 7th grade represents a transition from elementary school to middle school, meaning a transition from a class teacher system to a subject teacher system. Altogether, 27 (45%) third-grade students and 33 (55%) seventh-grade students participated in this study. As was expected, most students in the special classes were boys (table 7).

Table 7. Information concerning the interventions and control groups (number of participants, gender, and grade in school)

		Intervention and Control Groups							
Grade	Gender	EASE		ART		MATH		TAU	
		n	%	n	%	n	%	n	%
3 rd	Boys	8	89	7	78	0	0	7	78
	Girls	1	11	2	22	0	0	2	22
	Total	9	100	9	100	0	0	9	100
7 th	Boys	5	63	7	78	7	78	4	57
	Girls	3	37	2	22	2	22	3	43
	Total	8	100	9	100	9	100	7	100
All participants		17	28 ¹	18	30 ¹	9	15 ¹	16	27 ¹

Intervention groups were EASE 3, EASE 7, ART 3, ART 7, and MATH 7. TAU 3, and TAU 7 remained as control groups. There were no third-grade students in the MATH intervention.

1 The percentage breakdown of all 60 students who participated in this study.

When selecting schools, groups, and participants, the aim was to include schools teaching regional special needs groups of students with learning problems (for instance, attention deficit disorder, attention deficit hyperactivity disorder, difficulties in reading, writing, or mathematics). In addition, some students also had other difficulties, including behavioral and emotional problems.

In regional special class teaching, learning and assessment are based on the general curriculum. Each regional special class had a maximum of ten students. Educational support is provided by a special class teacher, who teaches most school subjects for the group. During the interventions, all these special classes had a school assistant service, providing one or two school assistants, depending on students’ needs.

The study had no randomized sample concerning the schools, groups, or participants. Instead, the decision about the convenience sample was made by considering expenses and the fact that the researcher was working full-time when the interventions were implemented. Schools had to be easily reached by public transportation.

Students’ backgrounds

At the time of the interventions, the students were between 9 and 16 years of age, with the 3rd graders being between 9 and 11 ($M=9.48$ years) and the 7th graders between 13 and 15 years of age ($M=13.48$). There were several reasons for including participants of different ages, even though they studied in the same grade. One reason was statistical. Students’ ages are documented based on the date, not on the year, meaning that those students who were born at the beginning of the year seem a year older than those classmates who were born later in the year. In

addition, some students had previously repeated a class. Several students were new to the special class environment, having before been placed either in a mainstream classroom or directly in special education.

Most participants had Finnish as their mother tongue. Notably, though, there were differences between the schools concerning students' mother tongue. All students in the MATH 7 and TAU 7 groups had Finnish as their mother tongue, despite the schools not being located in the same region. Fifteen per cent of participants had Finnish as a second language, with the mother tongue being Swedish, Estonian, Chinese, Thai, or Arabic.

6.5.3 Representativeness of the sample

The study was conducted in a single municipality in southern Finland. The sample represented regional special class students whose primary reasons for being placed in a special class were learning problems, since all participants had met the same criteria and procedures for special education placement as the rest of the student population. Table 8 shows the percentages of regional special class students in the 3rd and 7th grades who participated in this study. The special classes contained more boys (75%) than girls, which is typical of special class on a national level. Furthermore, many special class students had a language other than Finnish as their mother tongue. Thus, the participants in this study with Finnish as a second language were compared to the population at large on a representative level.

Table 8. Information concerning all students with special needs in regional special classes in the municipality during the years 2008–2009 and 2009–2010, and the number and percentage of students who participated in intervention programs and control groups for this study

Grade	2008 - 2009					2009 - 2010				
	All ¹		Sample		Program(s)	All ¹		Sample		Program(s)
	N	%	n	% ²		N	%	n	% ²	
3 rd	85	100	9	11	EASE	78	100	18	23	ART, TAU
7 th	97	100	8	8	EASE	111	100	25	23	ART, MATH, TAU

¹ All students with special needs studying in regional special classes in the municipality.

² The percentage refers to how many regional special class students in the municipality participated in this study.

6.6 Instruments

The data was collected from students, parents, and teachers. Additional field notes concerning the EASE treatment were compiled by the researcher and equine assistant after each session. Teachers had binders with questionnaires, the schedule, instructions for each questionnaire, and the estimated time for completing the questionnaires. They forwarded envelopes with letters, instructions, and a return

envelope to the parents. Parents returned the completed questionnaires “glued and sealed” to the teacher, who placed them in the binder. The researcher collected the binders from each school according to the schedule.

The study included several instruments for measuring students’ well-being. The primary instrument was the ASEBA, which provides multifaceted information from three sources on the student’s life and circumstances. Since ASEBA is challenging to complete, parallel instruments were also included for measuring aggression, empathy, and loneliness. These instruments are not standardized in Finland, nor are they peer-reviewed instruments. Since the study assesses an animal-assisted program, an instrument was also included to gather information about students’ animal contacts and experiences.

6.6.1 Achenbach System of Empirically Based Assessment

Students’ well-being was measured using ASEBA. Achenbach (2010) used *psychopathology* as a definition to describe behavioral, emotional, social, and cognitive attributes connected with maladaptive development and functioning. They did not automatically indicate diseases, even though some might have originated from biological factors (Achenbach, 2010).

ASEBA, the main instrument in this study, has been used worldwide and translated into 85 languages (Achenbach, 2010, 2019). The forms included in ASEBA are practical for studies involving re-assessments and offer measures for assessing interventions done with controls (Achenbach, 2010, 2019; Achenbach, Becker, Döpfner, Heiervang, Roessner, Steinhausen, & Rothenberger, 2008; Janssens & Deboutte, 2009; Achenbach & Ruffle, 2000). The *Youth Self Report* (hereinafter YSR) (Achenbach, 1991), *Teacher’s Report Form* (hereinafter TRF), (Achenbach, 1991), and *Child Behavior Check List* for parents (hereinafter YSR) (Achenbach, 1991) are all ‘problem-based’ forms, focusing attention mostly on negative items. They have also been translated into Finnish (Almqvist 1996). The instrument was used in this study for several reasons. First, another prior study has used ASEBA with an equine-assisted program for SEN students. Greenwald (2001) focused on self-esteem, frustration tolerance, depression, and anxiety outcomes after conducting an equine-assisted program with emotionally disturbed boys (Greenwald, 2001). Second, the Finnish “About Current Care Guidelines” (2019) recommend using this instrument for children and adolescents with hyperactivity and attention problems (Puustjärvi, 2016). Third, the instrument’s eight-symptom structure has been standardized in Finland (Ivanova, & al., 2007). The symptoms (figure 5) are as follows: *anxious-depressed*, *withdrawn-depressed*, *somatic complaints*, *social problems*, *thought problems*, *attention problems*, *rule-breaking behavior*, and *aggressive behavior* (Achenbach, 2010). Fourth, ASEBA also provides information obtained from parents and teachers, as is preferable when working with children’s emotional, social, and behavioral problems.

Variance in parents' and teachers' answers might indicate that the students act and behave differently at home compared to at school (Achenbach, 2019).

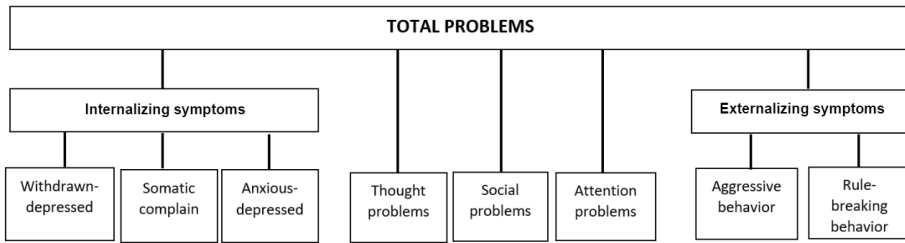


Figure 5

Sum variables of the Achenbach System of Empirically Based Assessment (ASEBA)

Each ASEBA questionnaire comprehensively assessed behavioral, emotional, and social problems, rating them on a three-point Likert-scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true) (Achenbach, 2010; Burt, & Rescorla 2015). The assessment can be completed at various intervals specified on the forms, like two months or six months (Achenbach, 2019), but in this study the pre-test and post-test had only eight-to-ten-week intervals.

The CBCL scales and YSR scales were revised in 2001, replacing six items from the 1991 version (Achenbach & Rescorla , 2001), but the present study applied the 1991 version (being Finnish 1996 version). The YSR (1991) scales contain diverse items concerning the student's life and well-being, including free-time activities, family matters (duties at home, having siblings, relationships with family members), success in school subjects, and health items. The 118 questions include 106 problems or negative items and only 12 items determining positive qualities. This instrument is four pages long and should be completed in 10 to 20 minutes using a paper-and-pencil format.

As was expected, the ASEBA instruments provided mostly non-normal distributions (table 9). This means that in practice most analyses were conducted using non-parametric tests, which proved less powerful than their parametric counterparts. Parametric tests were performed whenever normality estimates were met.

Table 9. Normality estimates for ASEBA sum variables

Variable	YSR			CBCL			TRF		
	Pre-test	Post-test	Delayed post-test	Pre-test	Post-test	Delayed post-test	Pre-test	Post-test	Delayed post-test
Withdrawn-depressed	2	2	2	2	2	1	1	2	2
Somatic complaints	2	2	2	2	2	1	2	2	2
Anxious-depressed	2	2	2	2	2	2	1	1	2
Thought problems	2	2	2	2	2	2	2	2	2
Social problems	2	2	2	1	1	2	2	2	2
Attention problems	1	2	1	1	1	1	1	2	1
Aggressive behavior	2	2	2	2	2	1	2	2	2
Rule-breaking behavior	2	2	2	2	2	2	2	2	2

1 = normal distribution, 2 = non-normal distribution
YSR = Youth Self Report, CBCL = Child Behavior Check list (parents), TRF = Teacher Report Form

The ASEBA instruments, which included YSR scores for students, CBCL scores for parents, and TRF scores for teachers, were not identical concerning students’ school success. The TRF form gave teachers the opportunity to choose all six school subjects, while the YSR and CBCL forms only listed the subjects to be assessed. The YSR form listed Finnish, history/religion, mathematics, arts, physical education, and an additional subject that the student could choose on her/his own. The CBCL form listed Finnish, science/religion/history, mathematics, biology/physics/chemistry, and three additional subjects that the parents could choose. In addition, the TRF form had an unequal scale compared to the YSR and CBCL forms. Therefore, the same subjects were selected when coding the data. Students also responded to open-ended questions, like describing their lives and themselves in more detail. Only a few students provided additional information. Likewise, only a few teachers provided information and the reasons for why a student may have repeated a year. Common reasons included mathematical difficulties and general learning problems. The teachers did not mention specific reading or writing problems.

6.6.2 Parallel instruments for aggression, empathy, loneliness, and locus of control

The first parallel instrument assessed aggression. *The Aggression Questionnaire* (Buss & Perry, 1992) was constructed based on replicated factor analysis, producing evidence for four scales: physical aggression, verbal aggression, anger, and hostility. Physical and verbal aggression, which include items about harming other people, are characterized as active components of this behavior. Likewise, anger is aggression with emotional and affective components. Hostility, being a cognitive component, includes mean-spirited and unfair behavioral elements. Since the respondents often had difficulties with true or false questions, this questionnaire

was designed in Likert format with a five-point scale. It included such statements as *"I get mad quickly, but I get over it quickly," "If somebody hits me, I hit back,"* and *"Other kids always seem to catch a break (get off easy)."* The aggression questionnaire asked respondents to assess how well the 24 statements describe them and their actions (1 = *not like me at all*, 2 = *not much like me*, 3 = *only slightly like me*, 4 = *somewhat like me*, and 5 = *very much like me*.) (Buss & Perry, 1992).

The second parallel instrument was Davis's (1980) *Empathy Questionnaire*, which was used as an indication of how students recognize other people's feelings, thinking, and perspective. This instrument has four dimensions: a fantasy scale (identifying with books, movies, and so forth), a perspective-taking scale (considering another point of view), an empathetic concern scale (warmth and compassion), and a personal distress scale (anxiety and inconvenience) (Ewing et al., 2007). The original Empathy questionnaire had a five-point Likert scale ranging from 0 to 4. Since the SEN students experienced learning problems, the scale was modified from 1 to 5 in this study, making it similar to the other questionnaires. Statements included *"I really get involved with the feelings of the characters in a story," "Becoming extremely involved in a good book or movie is somewhat rare for me,"* and *"I sometimes try to understand my friends better by imagining how things look from their point of view."* Answers ranged from 1 = *does not describe me at all*, to 2 = *describes me only a little*, to 3 = *describes me to some extent*, to 4 = *describes me quite a lot*, and finally, to 5 = *very much describes me*. Question number 19 was written incorrectly in the Finnish version, changing the meaning from *"Sometimes I don't feel very sorry for other people when they are having problems"* to *"Sometimes I feel very sorry for other people when they are having problems,"* a complete reversal of the original intent. The mistake was accounted for in the SPSS matrix by not reversing students' answers, as they were supposed to have done in the original version. This coding process was double checked when reversing the selected items in the empathy questionnaire.

The third parallel instrument, *Children's Loneliness Questionnaire* (Asher, Hymel, & Renshaw, 1984), assesses students' loneliness. This questionnaire helps researchers determine whether those children who seem to be unpopular are lonely or discontented with their peer relations. The authors of this instrument have also suggested that it should be used to select students for intervention programs (Asher et al., 1984). The instrument is appropriate for gathering information on how students experience social satisfaction and relationships (Ewing et al., 2007). It consists of a total of 24 items, with 16 primary items focusing on children's loneliness (e.g., *"I'm lonely"*), social suitability versus unsuitability (*"I'm good at working with other children"*), and subjective grading of peer status (e.g., *"I have lots of friends"*). Eight additional items deal with hobbies and activities (e.g., *"I like to paint and draw"*), making it easier for students with learning problems to more comfortably respond to the statements. This instrument uses a five-point Likert scale to record how well each statement describes the respondent (e.g., 1 =

not true at all, 2 = *hardly ever true*, 3 = *sometimes true*, 4 = *true most of the time*, and 5 = *always true*) (Asher, Hymel, & Renshaw, 1984).

The fourth parallel instrument, locus of control, was chosen for two reasons. First, it measures children’s locus of control, and second, it has been used previously in equine-assisted research. The Locus of Control Scale for Children was developed by Nowicki and Strickland (1971). The original version, the Internal-External Control Scale for Children (CNSIE), was a paper-and-pencil instrument consisting of 40 questions to be marked either 1 = *yes* or 2 = *no*. Ewing et al. (2007) used this scale in their study concerning equine-assisted activities. Since CNSIE has valid internal and temporal cohesion, the researchers used it to measure locus of control. They kept the same number of statements but modified the original scale by testing it with nine clinical psychology staff members. They replaced any items that the staff did not agree with (Ewing et al., 2007). The same locus of control questionnaire was used in this study. Since Ewing et al. had conducted their own study in English, it was translated into Finnish before conducting the interventions. Likewise, since the students in this study had learning problems, the scale was modified from a three-choice Likert scale to a five-choice Likert scale to make it similar with other parallel instruments. Thus, the locus of control questionnaire used in this study measured students’ opinions about their level of influence or control over certain items and actions with 40 statements. The statements either assessed either their internal or external locus of control. Fourteen statements involved internal locus of control items (*“You can stop yourself from catching a cold,” “Getting good grades is important to you”*) and 26 statements involving external locus of control items (*“Most problems solve themselves if you don’t mess with them,” “Some kids are born lucky”*).

Parallel instruments that only the students answered provided both a normal and non-normal distribution (table 10).

Table 10. Normality estimates for parallel instruments (aggression, empathy, locus of control, and loneliness)

Variable	Pre-test	Post-test	Delayed post-test
Aggression			
Physical aggression	1	1	1
Verbal aggression	1	1	1
Anger	1	2	1
Hostility	1	1	2
Empathy			
Fantasy	1	1	2
Perspective-taking	1	2	2
Empathic concern	2	2	2
Locus of control			
Internal	1	1	1
External	1	1	1
Loneliness	2	1	2

1 = normal distribution, 2 = non-normal distribution

While the empathy questionnaire assessed a fantasy dimension, perspective-taking dimension, and empathic concern dimension, it omitted personal distress items, as was also done in the study by Ewing et al. (2007). Seven items were reversed in the empathy instrument, as was the code of conduct.

The loneliness instrument contained 24 items, sixteen primary items measuring students' level of social dissatisfaction and loneliness and eight additional items. The additional items, which assessed interests and hobbies, were excluded from the data before beginning the analytical process. Then, according to the instructions for using the instrument, ten questions were reversed when scoring the items. The items included statements having to do with being excluded from the group or having nobody to talk to in class. The greater the sum of the scores, the less the lonely student reportedly felt. To measure loneliness in this study, all the scores from the independent statements were transformed and recoded (the highest value of 5 was recoded as 1, 4 was recoded as 2, 3 remained the, 2 was recoded as 4, and 1 was recoded as 5). After this process, the higher the score, the lonelier the student reportedly felt.

The locus of control instrument had fourteen internalized and 26 externalized items. The internalized locus of control concerned items relating to autonomous actions, while the externalized items had to do more with controlling actions. Analysis of the internal locus of control responses was conducted via a paired samples t-test since this data followed normal distribution.

When computing the variables of aggression, anger, hostility, physical aggression, and verbal aggression, only anger in the pre-test and hostility in the delayed post-test followed a non-normal distribution pattern.

Human/Pet Relationship

Data was collected on students' experiences with pets for several reasons. First, one of the intervention programs concerned animal-assisted activities, so it was deemed reasonable to know if students had been around animals before and the type of contact. Second, since one of the parallel instruments focused on empathy items, it was interesting to receive information on, for example, the loss of a pet. Third, prior studies have been done concerning the connection between pet ownership and human well-being. The information, though, will be used in a future study.

Beck and Katcher (2003) have suggested that all studies concerning human health should consider whether such individuals have had pets. The nature of human-pet relationship and interactions have proved significant in assessments, meaning that future studies should consider these types of relationships and interactions in more detail (Beck & Katcher, 2003). Siegel's (1993) human/pet relationship instrument has helped frame students' experiences with pets and the role of animals in their lives (Anderson, 2007). This instrument concentrates on items like having pets, spending time with them, taking care of them, making the

decision to have a pet, and any discomforts associated with or advantages of having pets.

6.6.3 Reliability estimates for instruments

Reliability determines the extent to which the test results are free of measuring errors (Muijs, 2016). To interpret the test results appropriately with respect to inner functions, such as human feelings and thoughts, it is crucial to explicitly examine whether any random errors occurred during the assessment process (Nummenmaa, 2011). Thus, reliability indicates the consistency of the test results when using the same measure, for example how stable the instrument has proven in differing conditions (Drost, 2011; Metsämuuronen, 2003) and the degree to which the test scores are free of any measurement errors (Muijs, 2016). Therefore, in this study reliability was determined in three ways to estimate measure error: having parallel instruments besides the main instrument (ASEBA), repeating the test with the same instrument, and indicating the internal consistency of the original instrument (Muijs, 2016; Nummenmaa, 2011; Metsämuuronen, 2003). If the reliability estimate, a Cronbach's α , is below .60, then the reliability of the results decreases, and the outcomes need to be interpreted with care. When using the ASEBA instrument, it was discovered that, based on the students', parents', and teachers' replies, the reliability estimates for three of the sum variables were low. In the pre-test, students' responses to questions about attention problems (YSR), parents' responses to questions about thought problems (CBCL), and teachers' responses to questions about somatic complaints (TRF) did not reach appropriate reliability estimate levels in the pre-test (see appendix 3). Since intervention outcomes were measured in the pre-test and post-test based on students' responses in the questionnaires, the reliability of these sum variables was also measured (appendix 3). In the pre-test, Cronbach's α indicated a low value (.56) for attention problems. Other sum variables had reasonable values with respect to reliability.

Then, reliability was measured using parallel instruments (aggression, empathy, locus of control, and loneliness). It was discovered that Cronbach's α was below the required value for all post-test sum variables concerning the four sum variables (anger, hostility, physical aggression, and verbal aggression) for aggression (appendix 3). Unlike the aggression sum variables, the Cronbach's α estimates required values for all three empathy sum variables (empathic concern, fantasy, and perspective-taking), both in the pre-test and post-test (appendix 3). Further, the parallel instrument for measuring locus of control also had appropriate reliability estimates concerning both the internal locus and external locus of control, as well as loneliness, in both the pre-test (.84) and post-test (.82), as presented in appendix 3.

6.6.4 Analysis of loss

Concerning the data analysis phase of the study, missing data has proven one of the most prevalent problems faced by researchers (Tabachnick & Fidell, 2007). Imputation, the replacing of missing value with the mean of the target variable values, was inappropriate in this study since it could alter distribution, leading to misinterpretation during the analysis.

In this study, the external loss of data proved to be dependent on the test and the group. Loss of data was evident especially with respect to the ASEBA instrument, which was used to assess students', parents', and teachers' answers and identify any connections, similarities, or dissimilarities in the responses. External loss of data was a problem with more than 50% of parents' and teachers' post-test and delayed post-test responses (table 11).

Table 11. Pre-test, post-test, and delayed post-test responses when using the ASEBA instrument

Respondent	Pre-test		Post-test		Delayed post-test		All	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i> ^a	% ^a
CBCL	40	67	24	40	29	48	17	35
TRF	25	42	32	53	45	75	15	25
YSR	46	77	50	83	41	68	29	48

CBCL = parents, TRF = teachers, and YSR = students.

^a Last row indicates how many respondents completed all three tests.

Since the deletion of missing cases may not have been a problem if such cases were not essential for data analysis (Tabachnick & Fidell, 2007), parents' and teachers' data were excluded from the main analyses concerning outcomes after the interventions. Instead, data received during the pre-test from parents and teachers was used as background information, especially when comparing the connections between adults' and students' answers.

The external loss analysis was performed in several steps. First, each participant was treated individually according to a specific procedure. Each respondent (student, parent, or teacher) was marked with the number 1 if he or she completed and returned the form. If the questionnaire was not returned, then they were assigned the number 0. If a student, parent, or teacher completed questionnaires during all three test times, then he or she was assigned the number 1 for the *student-parent-teacher* row. Then, data for the *student-parent-teacher* row data was cross-matched to find cases with complete data from students, parents, and teachers (table 12).

Table 12. Paired responses (student-parent, student-teacher, student-parent-teacher) when using the ASEBA instrument

Group	Pre-test			Post-test			Delayed post-test		
	YSR-CBCL	YSR-TRF	YSR-CBCL-TRF	YSR-CBCL	YSR-TRF	YSR-CBCL-TRF	YSR-CBCL	YSR-TRF	YSR-CBCL-TRF
EASE 3	3	0	0	3	0	0	0	7	0
EASE 7	5	0	0	2	6	2	0	0	0
ART 3	0	0	0	5	9	5	6	6	6
ART 7	8	9	8	8	0	0	8	8	8
MATH 7	4	0	0	0	0	0	0	5	0
TAU 3	9	9	9	0	7	0	5	8	5
TAU 7	5	6	5	4	6	3	4	4	4
Total	34	24	22	22	28	10	23	38	23

CBCL = parents, TRF = teachers, and YSR = students.

groups: EASE 3 (n = 9 students), EASE 7 (n = 7 students), ART 3 (n = 9 students), ART 7 (n = 9 students), MATH 7 (n = 9 students), TAU 3 (n = 9 students), and TAU 7 (n = 7 students)

Another problem was that the missing data did not occur systematically. Depending on the test (pre-test, post-test, or delayed post-test), the missing data did not concern the same students, parents, or teachers throughout all three testing times. Data was obtained from only two students (3%) for all three tests (see appendix 5). These students were in the TAU 7 group.

After identifying individual external loss, the data loss for each intervention group was examined. Notably, both systematic and random external loss of data was detected. Systematic loss resulted when a certain group did not complete and return the instruments, as was the case during the pre-test with the ART 3 group and EASE 7 group. A similar systematic external loss of data was also noticed with the parallel instruments (see appendix 6), as the EASE 7 group had missing data from the delayed post-test concerning aggression, empathy, and loneliness.

The students' gender did not influence external loss in this study. In the pre-test, 16 boys (36%) and 6 girls (40%) answered all 22 questions on the YSR component of the ASEBA, which was combined with the responses provided by parents (CBCL) and teachers (TRF). In the post-test, 7 boys (16%) and 3 girls (20%) completed the ten follow-up questions. In delayed post-test, 16 boys (36%) and 7 girls (47%), working with their parents and teachers, answered all 23 questions on the questionnaire.

The students' delayed post-test indicated higher external loss than the pre-test and post-test. It was given during the fall term of the next school year. Those students who had moved on to another school were not contacted. Adult forms were used mainly for background information due the low level of teacher and parent involvement. Participants who answered and returned all three measurements (pre-test, post-test, and delayed post-test) were included in this analysis: in total, 29 (48%) out of 60 students completed the ASEBA instrument during the pre-test, post-test, and delayed post-test. The corresponding numbers for parents and teachers who returned questionnaires for the three measures were 17 (28%) of parents and 15 (25%) out of 60 teachers.

6.6.5 Variables

In this study, the independent variables were gender, grade in school, program, and group. Additional independent variables were then added since the ASEBA provides a considerable amount of information. The additional variables consisted of students' educational history (former type of special education, grade in school when they were placed in special class, and whether they had repeated a grade), and family and leisure-time items (parents' occupation, siblings, home life, chores, pets, sports, or other hobbies).

The ASEBA instrument's eight sum variables included internalizing symptoms ("anxious-depressed," "withdrawn-depressed," and "somatic complaints"), externalizing symptoms ("aggressive behavior" and "rule-breaking behavior"), and three other sum variables ("thought problems," "social problems," and "attention problems").

The parallel measures were easier for students to complete despite the fact that they contained similar items as the ASEBA instrument. The aggression measure consisted of four sum variables (physical aggression, verbal aggression, anger, and hostility). The empathy measure consisted of three sum variables (fantasy items, perspective-taking items, and empathic concern items). The loneliness measure assessed participants' self-reported experiences of loneliness.

The research questions, hypothesis, instruments and scales, and analytical procedures are presented in three parts. The results from the first part focus on students' school success based on their own opinions as well as those of their parents and teachers (table 13).

Table 13. Research questions, hypothesis, instruments and scales, and analytical procedures for assessing students' school success (in mathematics and Finnish) based on their own opinions as well as those of their parents and teachers

1. Conceptions of students' school success			
Research Question	Hypotheses	Instruments and scales	Analysis procedure
Q1.1: Are SEN students', parents', and teachers' views concerning students' school success related? Further, is students' relation with parents connected with SEN students' school success?	H1.1.: Students' close relations with parents (Wentzel, Russell, & Baker, 2016; Seppala, Rossomando, & Doty, 2013; Updegraff, Thayer, Whiteman, Denning, & McHale, 2005) as well as parental interest and attention toward their children's schoolwork, is related to school success (Flouri, 2006).	Relationship with parents YSR, CBCL: scale 1, 2, 3	Descriptive statistics
		Academic performance YSR, CBCL, TRF: scale 1, 2, 3, 4	Spearman's rho correlation
			Related-Samples Wilcoxon Signed Rank Test
Q 1.2: Was there a connection between how long time the student had already spent in special education class and their conceptions of school success (in mathematics and in Finnish)?	H2.1.: The shorter the stay in special class, the better the school success, since SEN students have better school success if they have studied in mainstream class (Shifrer, 2013).	Academic performance YSR, CBCL, TRF: scale 1, 2, 3, 4	Independent-Samples Kruskal-Wallis Test
			Descriptive statistics
			Spearman's rho correlations
Q 1.3: Was there a connection between school success (mathematics and Finnish) and how many friends the SEN student had?	H1.3: The number of friends is related with students' school success (Nelson & DeBacker, 2008).	Academic performance YSR, CBCL, TRF: scale 1, 2, 3, 4	Independent-Samples Kruskal-Wallis Test
			Descriptive statistics
			Spearman's rho correlations

Students' real school success was not measured in this study. The data of school success consisted of ideas and beliefs of students' abilities compared to their peer group.

The results from the second part focus on students', parents', and teachers' opinions concerning students' well-being and whether students' social relations or free-time activities relate to their well-being (table 14).

Table 14. Research questions, hypothesis, instruments and scales, and analytical procedures for assessing the well-being of students based on their own opinions as well as those of their parents and teachers

2.Students' well-being			
Research Question	Hypotheses	Instruments and scales	Analysis procedure
Q2.1: Did students, parents, and teachers have similar opinions regarding students' well-being? Were there differences in well-being between boys and girls?	H2.1.: Since parents had known their children from birth, parents and students shared similar opinions on students' well-being. Adolescent girls are more depressed than boys (Hagborg, Tidefors, & Fahlke, 2017), so well-being is related with gender (Bluth, Campo, Futch, & Gaylord, 2017).	Well-being: YSR, CBCL, TRF: scale 0, 1, 2	Descriptive statistics Spearman's rho correlations Related-Samples Wilcoxon Signed Rank Test Mann-Whitney U Test Independent-Samples Kruskal-Wallis Test
Q2.2: Was there a connection between well-being and the number of years these students (with special needs) have stayed in special class?	H2.2.: The 7 th grade girls' well-being concerning withdrawn-depressed symptom and anxious-depressed symptom is not lower compared to boys or the 3 rd grade students (Bluth, Campo, Futch, & Gaylord, 2017). Younger students benefit more on interventions (Hattie, 2008; January et al., 2011; Schultz et al., 2007), so the 3 rd grade students' well-being is better compared to the 7 th grade students after special class placement as a pedagogical intervention.	Well-being: YSR, CBCL, TRF: scale 0, 1, 2	Spearman's rho correlations Independent Samples Kruskal-Wallis Test
Q2.3: Was there a connection between well-being and students' (with special needs) social relations (family and friends)?	H2.3.: As girls are more empathic (Daly & Morton, 2006), it was expected that social relations (connections with parents, siblings, peer group and students' close friends) have different effects on students' well-being depending on students' gender. In addition, students who have good relations with siblings are less aggressive (Updegraff et al., 2005).	YSR, CBCL, TRF: scale 0, 1, 2 The Aggression Questionnaire: scale 1, 2, 3, 4, 5 Empathy Questionnaire: scale 1, 2, 3, 4, 5 Children's Loneliness Questionnaire: scale 1, 2, 3, 4, 5	Percentiles Spearman's rho correlations Independent Samples Kruskal-Wallis Test
Q2.4: Was there a connection between well-being and students' (with special needs) activity in free-time activities?	H2.4.: Despite well-being is improved by weekly sports (Merglen, Flatz, Bélanger, Michaud, & Suris, 2016), structured leisure-time activities are connected to well-being only with emotionally healthy students (Trainor, Delfabbro, Anderson, & Winefield, 2010).	YSR, CBCL, TRF: scale 0, 1, 2	Spearman's rho correlations Independent Samples Mann-Whitney U Test

The results from the third part focus on the outcomes after three interventions (EASE, ART, and MATH) As well as the control programs and their outcomes (table 15).

Table 15. Research questions, hypothesis, instruments and scales, and analytical procedures for assessing intervention outcomes

3. A short-term intervention and its outcomes			
Research Question	Hypotheses	Instruments and scales	Analysis procedure
Q3.1: Do students' (with special needs) well-being benefit from a short-term intervention?	H3.1.: An additional program could benefit students' well-being by decreasing aggressive behavior and increasing attention as well as social relations with peer group (Berry, Axford, Blower, Taylor, Edwards, Tobin, Jones & Bywater, 2015). Social skills programs have short-term benefits (Hattie, 2008).	Well-being: YSR, CBCL, TRF: scale 0,1,2 The Aggression Questionnaire: scale 1, 2, 3, 4, 5 Empathy Questionnaire: scale 1, 2, 3, 4, 5 Children's Loneliness Questionnaire: scale 1, 2, 3, 4, 5 The Locus of Control: scale: 1, 2	Spearman's rho correlations Related-Samples Wilcoxon Signed Rank Test Frequencies
Q3.2: Were intervention outcomes related to the intervention method?	H3.2.: EASE as an outdoor education program has positive effects (Hattie, 2008), and is more effective than ART or MATH that are programs based on discussion or academic instruction (January et al., 2011; Trotter et al., 2008). EASE decreases aggression (Ewing et al., 2007; Kaiser et al., 2008).	YSR: scale 0, 1, 2 Children's Loneliness Questionnaire: scale 1, 2, 3, 4, 5 The Aggression Questionnaire: scale 1, 2, 3, 4, 5 Empathy Questionnaire: scale 1, 2, 3, 4, 5 The locus of Control: scale: 1, 2	Spearman's rho correlations Related-Samples Wilcoxon Signed Rank Test Frequencies
Q3.3: Were intervention outcomes related to students' (with special needs) gender?	H3.3.: There are only minor differences in outcomes based on students' (with special needs) gender (Hattie, 2008), adolescent girls are more depressed than boys of the same age-group (Bluth et al., 2017), there is no difference in locus of control based on students' (with special needs) gender (Chubb & Fertman, 1997).	YSR: scale 0, 1, 2 Children's Loneliness Questionnaire: scale 1, 2, 3, 4, 5 The Aggression Questionnaire: scale 1, 2, 3, 4, 5 Empathy Questionnaire: scale 1, 2, 3, 4, 5 The locus of Control: scale: 1, 2	Spearman's rho correlations Related-Samples Wilcoxon Signed Rank Test Frequencies
Q3.4: Were intervention outcomes related to students' (with special needs) grade?	H3.4.: Interventions have stronger effects for 3rd grade students than 7th graders (Hattie, 2008; January et al., 2011; Schultz et al., 2007). Locus of control gets less external the older students are (Chubb & Fertman, 1997).	YSR: scale 0, 1, 2 Children's Loneliness Questionnaire: scale 1, 2, 3, 4, 5 The Aggression Questionnaire: scale 1, 2, 3, 4, 5 Empathy Questionnaire: scale 1, 2, 3, 4, 5 The locus of Control: scale: 1, 2	Spearman's rho correlations Related-Samples Wilcoxon Signed Rank Test Frequencies

6.7 Analysis procedures

Most of the variables in this study were not normally distributed. Unlike with other variables, however, student' success in mathematics had a normal distribution: N was below 30 and did not meet the criteria for parametric tests. Therefore, in this

study statistical analyses were conducted via nonparametric tests (see tables 6.11, 6.12 and 6.13) according to the distribution assumptions provided by the data (see table 6.7 and table 6.8). In addition, as recommended (Nummenmaa, 2009; Abdi, 2007), post-hoc tests were conducted with those research questions that allowed for multiple comparisons and groups.

Thus, the entitlements were carried out using the statistical methods as follows. First, well-being symptoms regarding the ASEBA sum variables (*anxious-depressed, somatic complaints, withdrawn-depressed, attention problems, thought problems, social problems, aggressive behavior, and rule-breaking behavior*) were non-normally distributed, justifying the use of nonparametric tests (Howell, 2010; Nummenmaa, 2009; Metsämuuronen, 2003). However, an exception occurred when the data met the criteria for parametric analysis, having both a normal distribution and reasonable number of responses. Therefore, parametric tests were conducted for those students with attention problems (YSR) in the pre-test and delayed post-test. Despite the criteria for a normal distribution being met regarding attention problems in the parents' (CBCL) and teachers' (TRF) data, not enough answers had been received to fulfil the requirements for parametric tests. Second, data from the parallel instruments provided a normal distribution (*locus of control, physical aggression, verbal aggression*), non-normal distribution (*empathic concern*), or both depending on whether it was obtained during the pre-test, post-test, or delayed post-test (*fantasy items, perspective taking, loneliness, anger, and hostility*).

The Mann-Whitney U test was used as a nonparametric test to assess whether two independent samples differed concerning their median values (Sheskin, 2000), for example when boys and girls, or 3rd graders and 7th graders, were compared in this study. If the Mann-Whitney U test provided a significant result, it meant that the medians of the two samples differed significantly. It likewise meant that there was a high probability that the samples characterized populations with diverse medians (Sheskin, 2000).

Results from another nonparametric test, the Wilcoxon Signed-Ranks Test, provided information that the sample derived from a population with a median other than 0. Since the ranking process belonged to the test protocol, this test could be categorized as a test using ordinal data (Sheskin, 2000).

6.8 Ethical considerations

This study was approved by a Finnish education unit of the municipality. When the interventions were first implemented, agreements were not required from students. Permission from principals and teachers were received by meeting with them personally and providing information about this research project. Also, students were reminded that participation was voluntary, but the intervention lessons were still part of their school day. Parents received an information letter for them

to sign, giving permission for their child to participate in this study. That said, ethical concerns may well have emerged despite these anticipatory actions concerning voluntariness.

First, those parents and students who belonged to the ART, MATH, or TAU groups knew that their group was being paid for participating in this study. The ASEBA instrument proved stressful and difficult for students to complete, even though students wanted to complete them. Perhaps the payment served as encouragement for them to do that. Yet all groups were paid the same sum regardless of how many students, parents, or teachers completed the questionnaires.

Second, the students' data involved both educational and personal information. To confirm confidentiality, students returned the completed questionnaires to the teacher, who kept them in a locker. Parents' questionnaires were returned in sealed envelopes and also kept in the teachers' lockers. After the study had been completed, all questionnaires were destroyed.

Third, the focus on a special education class may have made the students feel that they were being "labelled." Instead of inviting students from mainstream classrooms to participate in this study from, students were selected precisely because of their special need status. This procedure could have strengthened feelings of being different from the peer group. On the other hand, the adolescents may also have felt empowered because they had the opportunity to be involved as dynamic subjects in activities instead of being objects in a rehabilitation process (Kiviranta, Munck, Koskinen, & Tuulio-Henriksson, 2016). Thus, the interventions included activities that provided students with a sense of autonomy in making their own decisions about how and when to participate.

Fourth, the ASEBA instrument described students with undesired features. The CBCL and TRF assessments only included statements focusing on negative qualities, though the YSR form did include a few positive aspects. Despite the focus on negative and undesirable attributes, the intention of this study was not to confirm the students' sense of inferiority. Furthermore, the researcher should have considered more carefully the appropriate age for letting children self-assess their negative qualities and features. Accordingly, one parent provided detailed reasons for not permitting her child to participate, since this student had a long history of being tested and receiving diagnoses that mother felt were harmful for the student's self-esteem. The ASEBA instrument had quite detailed statements concerning misbehavior and sexual behavior, requiring a great deal of trust that the students would answer the items truthfully at school. Some students needed the school assistance service to complete all the questions. Besides being difficult to answer, the ASEBA questionnaire also caused problems for teachers and parents. Teachers were asked to fill out a form for each student three times during this study. That meant almost 30 forms. Some teachers did so for only one of the test periods or provided information only for certain tests. The same response rate applied to parents as well, with only a few parents returning all three tests. This lack

of response was understandable but resulted in a loss of valuable data. Likewise, it was not easy to locate students when they left for new schools. This also contributed to a lack of answers. However, despite all the complications with the ASEBA instrument, it conforms to the Current Care Guidelines for Finland, which are independent, evidence-based clinical practice guidelines related to health, medical treatment, and disease prevention (Duodecim, 2019). Considering the complexity involved in using the ASEBA instrument with special need students, though, more straightforward parallel instruments were needed.

Fifth, parents sent information that needed to be considered. Some students had low self-esteem resulting from learning difficulties and prior testing. It was hard for them to cope with anything that reminded them of being “special.” Therefore, these programs were presented with sensitivity and emphasized that the students would learn new competences.

Sixth, working full time and unexpected challenges in life meant that this study took longer than originally anticipated. In addition, educational legislation and the Finnish national curriculum changed during the years of the study. Despite these obstacles, this research project was worth finishing.

Seventh, another issue had to do with trust. According to Dawson, Jackson, and Nyamathi (2012), children with problematic family situations can distrust other adults, especially if one of the parents is incarcerated. However, this was not observed during the intervention programs, when adults engaged in “hands-on” activities with students. These activities offered students opportunities for more confidential communication. Especially equine-related activities provided opportunities for discussion. The discussions involved issues like sex, family matters, relations with friends, disappointments, and other personal subjects.

Eight, three schools were visited weekly. Waiting in the staff room before starting the intervention provided the researcher with an opportunity to get a sense of the school ethos, standards for interaction, and activities taking place in that school. Despite being treated in a friendly manner, I was also an outsider who had to take a neutral role, being “an outsider-scientist” without an authoritative role to interfere in situations.

The ninth ethical issue concerned the use of horses in the research activities. Ethical concerns must be considered whenever animals participate in human programs. Animals need appropriate protection, and they need to be assisted by professional handlers. Also, all possible risks and inconveniences for animals and people must be minimized. According to the considerations and guidelines for animal programs provided by Delta Society, a participation plan should be drawn up for the animals, one that accounts for the suitability of the program and behavioral predictability of activities involving humans, proper evaluation standards, the animals’ role, and specified signs showing when the animal is either on duty or off duty (Beck, 2000). To meet these criteria in this research project, enough adults took part to support good behavior by the students and anticipate any

possible challenges. To support the well-being of the three horses in this study, their surroundings were made as natural as possible through the provision of free hay, living in a herd, and having a stable with “open doors to come and go freely.”

7 Results

This chapter presents results from the three interventions for SEN students and their well-being. The first part of the results focuses on students' situation before the interventions were implemented, on how students, parents, and teachers viewed the students' school success and well-being and the extent to which they all shared the same perspective. Furthermore, the results report whether a student's years in special class education were related to her/his school success in two subjects (mathematics and Finnish). In addition, they discuss the extent to which the students' well-being related to three factors (number of years in special class, students' social relations, or free-time activities).

The outcomes after the interventions are reported in the second part of the results section. First, the results show whether an optional intervention had an impact on students' well-being, before providing a comparison of students' well-being outcomes depending on program, gender, and grade in school.

7.1 School success

To increase students' well-being through planning and by providing them with well-timed support that fit their needs, it is important to recognize those issues most affect SEN students. Furthermore, it is important that students, parents, and teachers have a similar understanding concerning students' academic competence. In this study, we assessed students' ability in mathematics and Finnish by asking participants (students, parents, and teachers) to compare the competence of SEN students with that of their peer group in mathematics and Finnish. Further, we examined school success according to how many years the students had been receiving special class education and based on how many close friends the student had. Notably, this comparison was based on the opinions of students, parents, and teachers when they compared SEN students' ability with that of other same-age students. Students' school grades were not included as a data source for success in mathematics or Finnish.

7.1.1 Connection between students', parents', and teachers' thoughts on students' school success

Research question Q1.1 concerned students' school success. More precisely, it examined whether students, parents, and teachers had similar conception of students' competence in two school subjects (mathematics, and Finnish). With H1.1, we hypothesized that students' academic outcomes are closely relate to parents' interest in their child's schoolwork and affected by students' relationships with their parents. We answered the question using the data collected from students,

parents, and teachers before performing the interventions. Instead of students' test and school assignments, the data offered comparisons of students' skills in mathematics and the Finnish language (special needs students compared to their peer group). Table 16 shows this relationship based on students' gender and grade in school. Notably, there were only four groups that had also teachers' data concerning students' success in mathematics and Finnish. First the school success was analyzed regarding all students as a whole sample, and then the test was conducted according to students' gender, and group.

School success in the whole sample

Table 16 shows the data collected concerning students' school success from students, parents, and teachers before conducting the interventions.

Table 16. Descriptive statistics on students' school success in two school subjects (mathematics and Finnish), as assessed by students (YSR), parents (CBCL), and teachers (TRF)

	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	Valid	Missing					
success in mathematics							
CBCL	41	19	2.73	3.00	0.807	1	4
TRF	21	39	2.43	2.00	0.978	1	4
YSR	46	14	2.98	3.00	0.906	1	4
success in Finnish							
CBCL	41	19	2.51	3.00	0.637	1	4
TRF	16	44	2.44	2.50	0.814	1	4
YSR	46	14	2.67	3.00	0.871	1	4

Students' school success in mathematics and Finnish was based on parents', teachers', and students' opinions instead of students' factual competence. Students' school success in mathematics and Finnish was assessed by comparing it with peer group.
Scale: 1 = poor, 2 = under average, 3 = average, and 4 = over average

To examine the extent to which students, parents, and teachers shared similar thoughts regarding students' success in mathematics and Finnish, we conducted a Spearman's rho test to assess correlation. As hypothesized, students' relations with their parents strongly correlated with their performance. The results are presented in Appendix 7. The Spearman rho test revealed a moderate significant negative association between students' relations with their parents (CBCL) and teacher-reported success in mathematics (TRF) ($r_s(17) = -.54, p < .01, r^2 = .29$). Further, the test revealed a moderate positive association between success in mathematics (YSR) and success in Finnish (YSR) ($r_s(44) = .43, p < .001, r^2 = .19$). This result is significant for two reasons. First, the more students felt capable in mathematics, the more they felt also competent in Finnish. Second, the less students felt skillful in mathematics, the less they felt competent in Finnish. However, despite these connections, we did not find any statistically significant relations between students' and adults' views concerning students' success either in mathematics or Finnish.

Then, we conducted a related-samples Wilcoxon signed rank test to determine any possible differences concerning students', parents', and teachers' opinions of students' school success. The Wilcoxon test revealed no statistically significant

differences in any of the pairwise comparisons (students-parents, students-teachers, and parents-teachers) regarding success in mathematics or success in Finnish.

School success according to gender

Table 17 provides descriptive statistics on students' school success based on gender.

Table 17. Descriptive statistics on success in mathematics and Finnish based on students' gender

Variable	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	Valid	Missing					
success in mathematics							
boy							
CBCL	30	15	2.90	3.00	0.759	2	4
TRF	17	28	2.59	3.00	0.939	1	4
YSR	34	11	3.12	3.00	0.844	1	4
girl							
CBCL	11	4	2.27	2.00	0.786	1	3
TRF	4	11	1.75	1.50	0.957	1	3
YSR	12	3	2.58	3.00	0.996	1	4
success in Finnish							
boy							
CBCL	30	15	2.53	3.00	0.629	1	4
TRF	11	34	2.45	2.00	0.820	1	4
YSR	34	11	2.79	3.00	0.845	1	4
girl							
CBCL	11	4	2.45	3.00	0.688	1	3
TRF	5	10	2.40	3.00	0.894	1	3
YSR	12	3	2.33	2.00	0.888	1	4

Students' school success in mathematics and Finnish was based on parents', teachers', and students' opinions instead of students' factual competence (students' success was compared with peer group): scale 1 = poor, 2 = below average, 3 = average, and 4 = above average

With respect to students' success in mathematics, the teachers' mean score indicated the girls' mathematical skills being below average compared to those of their peer group. However, two matters needed to be considered. First, only 25% of all SEN students were girls. In addition, since girls usually are underrepresented in special class education, the girls in such classes tend to have severe learning problems.

To examine any possible connections between the gender-based assumptions of students, parents, and teachers regarding school success, we conducted a Spearman test. In addition, since it was hypothesized that parental relations have an impact on students' academic achievement, this variable was also considered. The results are presented in Appendix 7. With respect to the boys' data, the Spearman correlation test indicated two significant results. First, it revealed a moderate negative association between boys' relations with their parents (CBCL) and teacher-

reported success in mathematics (TRF) ($r_s(13) = -.55, p < .01, r^2 = .30$). Second, it revealed a moderate positive association between success in mathematics (YSR) and success in Finnish (YSR) ($r_s(32) = .42, p < .01, r^2 = .18$). Though the girls' data produced three statistically significant results, they needed to be interpreted with care because of the small number of girls in the group. First, the test revealed a strong positive association between girls' relations with their parents (CBCL) and success in mathematics (YSR) ($r_s(7) = .76, p < .01, r^2 = .58$). Second, it revealed a very strong negative association between parent-reported success in mathematics (CBCL) and teacher-reported success in Finnish (TRF) ($r_s(3) = -.97, p < .001, r^2 = .94$). Third, it revealed a very strong negative association between parent-reported success in mathematics (CBCL) and success in Finnish (YSR) ($r_s(7) = -.83, p < .001, r^2 = .69$).

Then, we conducted a related-samples Wilcoxon signed rank test to determine any possible differences concerning students', parents', and teachers' opinions of students' school success. As with the whole sample, the Wilcoxon test did not in this instance indicate any significant differences in any of the pairwise comparisons based on students' gender (students-parents, students-teachers, and parents-teachers) regarding success in mathematics or success in Finnish.

School success according to grade

According to this data, scores ranging between a minimum of two and a maximum of four show that the parents of 3rd graders had more positive estimations of students' mathematical and Finnish abilities than did the students and teachers (see table 18).

Table 18. Descriptive statistics of school success in mathematics and Finnish based on students' grade level

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
success in mathematics							
3 rd grade							
CBCL	18	9	3.00	3.00	0.767	2	4
TRF	9	18	2.67	3.00	1.118	1	4
YSR	15	12	3.27	4.00	0.961	1	4
7 th grade							
CBCL	23	10	2.52	3.00	0.790	1	4
TRF	12	21	2.25	2.00	0.866	1	4
YSR	31	2	2.84	3.00	0.860	1	4
success in Finnish							
3 rd grade							
CBCL	18	9	2.50	2.00	0.618	2	4
TRF	9	18	2.56	3.00	0.882	1	4
YSR	15	12	2.87	3.00	0.915	1	4
7 th grade							
CBCL	23	10	2.52	3.00	0.665	1	3
TRF	7	26	2.29	2.00	0.756	1	3
YSR	31	2	2.58	3.00	0.848	1	4

Students' school success in mathematics and Finnish was based on parents', teachers', and students' opinions instead of students' factual competence (students' success was compared with peer group): scale 1 = poor, 2 = below average, 3 = average, and 4 = above average

We compared SEN students' success in mathematics and Finnish with that of other students rather than reporting the students' actual skills in the two subjects. Thus, despite their learning problems, third-grade students' abilities in mathematics and Finnish also received a maximum score of four. Several seventh-grade students received a maximum score in mathematics, but a maximum score in Finnish of only three from parents and teachers and four from the students themselves.

We conducted a Spearman test to determine any possible connections based on grade between students', parents', and teachers' thoughts regarding students' school success. We included this variable based on the hypothesis that parental relations have an impact on students' academic achievement. The results are presented in Appendix 7. The Spearman correlation test indicated one significant result regarding third-grade students: a strong negative association between their relationships with their parents (CBCL) and teacher-reported success in mathematics (TRF) ($r_s(7) = -.78, p < .05, r^2 = .61$). We found no statistically significant associations between students' relationships with their parents and success in mathematics or Finnish for seventh-grade students, though.

Then, we conducted a related-samples Wilcoxon signed rank test to discover any possible differences concerning students', parents', and teachers' opinions of students' school success. The Wilcoxon test did not reveal any significant differences in pairwise comparisons based on students' grade in school (students-parents, students-teachers, and parents-teachers) regarding success in mathematics or Finnish.

School success according to intervention group

In addition, table 19 provides statistics regarding the opinions of students, parents, and teachers about the students' school success in mathematics and Finnish by group (EASE 3, EASE 7, ART 3, ART 7, MATH 7, TAU 3, and TAU 7).

Table 19. Descriptive statistics for each intervention group (EASE 3, EASE 7, ART 3, ART 7, and MATH 7) and control group (TAU 3 and TAU 7) regarding success in mathematics and Finnish

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
EASE 3							
mathematics CBCL	4	5	3.50	4.00	1.000	2	4
mathematics TRF	0	9					
mathematics YSR	5	4	3.00	4.00	1.414	1	4
Finnish CBCL	4	5	2.50	2.00	1.000	2	4
Finnish TRF	0	9					
Finnish YSR	5	4	2.20	3.00	1.095	1	3
EASE 7							
mathematics CBCL	5	3	2.60	3.00	0.548	2	3
mathematics TRF	0	8					
mathematics YSR	7	1	2.88	3.00	0.690	2	4
Finnish CBCL	5	3	2.20	2.00	0.837	1	3
Finnish TRF	0	8					
Finnish YSR	7	1	2.29	2.00	0.756	1	3
ART 3							
mathematics CBCL	5	4	3.20	3.00	0.447	3	4
mathematics TRF	0	9					
mathematics YSR	1	8	3.00	3.00		3	3
Finnish CBCL	5	4	2.40	2.00	0.548	2	3
Finnish TRF	0	9					
Finnish YSR	1	8	3.00	3.00		3	3
ART 7							
mathematics CBCL	4	5	2.75	3.00	0.500	2	3
mathematics TRF	0	9					
mathematics YSR	9	0	3.22	3.00	0.833	2	4
Finnish CBCL	4	5	2.75	3.00	0.500	2	3
Finnish TRF	0	9					
Finnish YSR	9	0	3.00	3.00	0.707	2	4
MATH 7							
mathematics CBCL	8	1	2.13	2.00	0.991	1	4
mathematics TRF	9	0	2.44	2.00	0.882	1	4
mathematics YSR	9	0	2.67	3.00	1.118	1	4
Finnish CBCL	8	1	2.25	2.00	0.707	1	3
Finnish TRF	0	9					
Finnish YSR	9	0	2.78	3.00	0.833	1	4
TAU 3							
mathematics CBCL	9	0	2.67	3.00	0.707	2	4
mathematics TRF	9	0	2.67	3.00	1.118	1	4
mathematics YSR	9	0	3.44	4.00	0.726	2	4
Finnish CBCL	9	0	2.56	3.00	0.527	2	3
Finnish TRF	9	0	2.56	3.00	0.882	1	4
Finnish YSR	9	0	3.22	3.00	0.667	2	4
TAU 7							
mathematics CBCL	6	1	2.83	3.00	0.753	2	4
mathematics TRF	3	4	1.67	2.00	0.577	1	2
mathematics YSR	6	1	2.50	2.50	0.548	2	3
Finnish CBCL	6	1	3.00	3.00	0.000	3	3
Finnish TRF	7	0	2.29	2.00	0.756	1	3
Finnish YSR	6	1	2.00	2.00	0.894	1	3

Students' school success in mathematics and Finnish was based on parents', teachers', and students' opinions instead of students' factual competence (students' success was compared with peer group): scale 1 = poor, 2 = below average, 3 = average, and 4 = above average

Despite being placed in special class education for their learning problems, each group of third-grade students had at least an average mean score for success in mathematics (note: the ART 3 group contained data from only one student). With respect to seventh-grade students, similar statistics only applied to the ART 7 group.

Then, we conducted an independent-samples Kruskal-Wallis test to discover any possible differences between groups (EASE, 3, EASE 7, ART 3, ART 7, MATH 7, TAU 3, and TAU 7) concerning success in mathematics and Finnish before conducting the interventions (figure 6.)

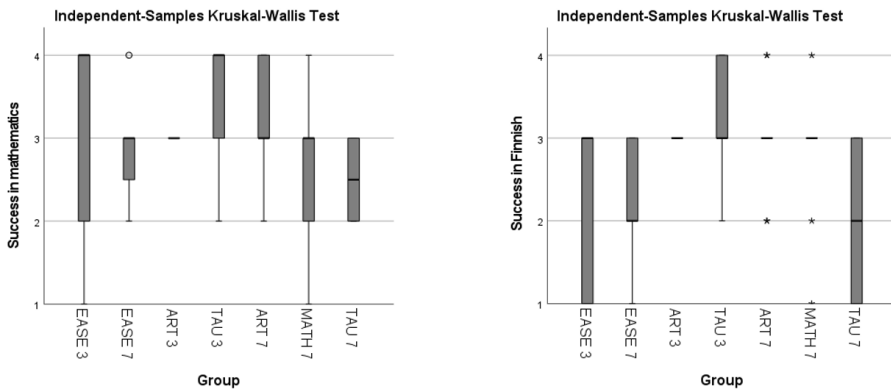


Figure 6

Students' success in mathematics and Finnish by groups (EASE 3, EASE 7, ART 3, ART 7, MATH 7, TAU 3, and TAU 7) based on student data (scale 1 = poor, 2 = below average, 3 = average, and 4 = above average)

Notably, the ART 3 group yielded data from only one student regarding success mathematics and Finnish, while the ART 7 and MATH 7 groups had missing values concerning Finnish. The Kruskal-Wallis test did not reveal any statistically significant differences between these groups regarding success in mathematics or Finnish.

Summary of students' and adults' views on school success

The first research question, Q1.1, considered whether students' relationships with their parents were related to school success and if any possible connections existed between students', parents', and teachers' opinions of students' school success. Hypothesis H1.1 assumed that parental influence predicts students' school performance. Those students who have good relations with their parents as well as parents who are interested in their schoolwork will have better school success.

The findings of this study did not indicate any statistically significant differences between students', parents', and teachers' opinions regarding students' abilities in mathematics or Finnish, meaning that opinions concerning school success in mathematics and Finnish were similar between students, parents, and teachers. In addition, students' school success was related to their relationship with their parents. Contrary to our predictions, though, teachers' opinions of students' success in mathematics had a negative association with students' relationships with their parents. However, this finding needs to be interpreted with care due to the fact that many teachers failed to complete the questionnaire. In conclusion, hypothesis H1.1 was supported by data received from both students and parents on students' performance in mathematics. The results indicate that a sense of competence in mathematics has a positive association with parental relationships.

7.1.2 Connection between school success and students’ number of years in special class education

Research question Q1.2 concerned the connection between the number of years SEN students had been studying in a special class and their school success. Hypothesis H1.2 predicted that those SEN students who had received support in a mainstream class would be more successful in school. The study included students who had been in a special class from the beginning of the first grade as well as students who had begun school in a mainstream class and started later in a special class. To answer the question, students’ school success was determined by making the grouping variable the number of years students had studied in a special class.

Figure 7 shows students’ placement in a special class. Most seventh-grade students (30 students; 90% of all students) had studied in a special class for at least half of their school years. The same phenomenon was evident with data from the third grade, with 23 students (85%) having been in a special class since the first grade.

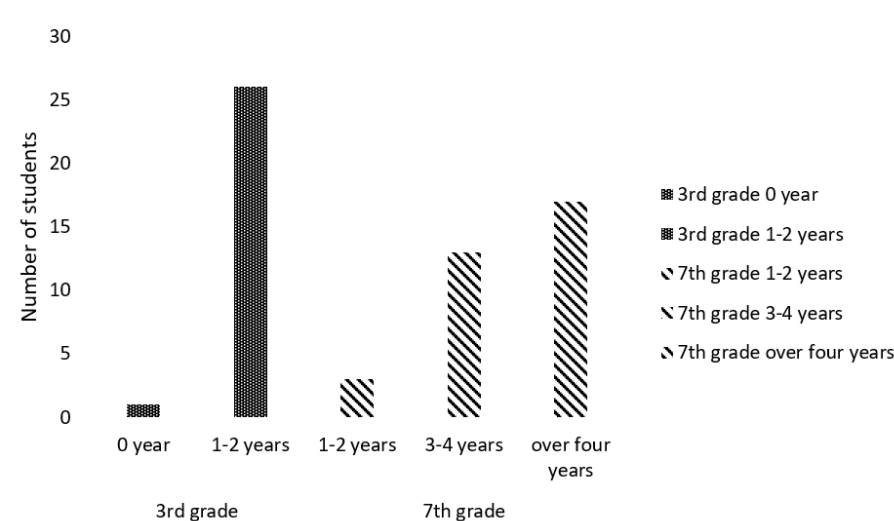


Figure 7
Students' special education background (0 = the first year in special class, 1 - 2 years = the second or third year in special class, 3 - 4 years = the fourth or fifth year in special class, over 4 years = the sixth or seventh year in special class)

We conducted a Spearman’s rho correlation test to ascertain whether the number of years in a special class is connected with school success (table 20).

Table 20. Spearman's rho test indicating connection between how long students have been in a special class and parents' (CBCL), teachers' (TRF), and students' (YSR) opinions about students' success in mathematics and Finnish

Variable	1	2	3	4	5	6	7
3rd grade							
1. success in mathematics CBCL	-						
2. success in mathematics TRF	.32	-					
3. success in mathematics YSR	.00	-.33	-				
4. success in Finnish CBCL	.34	.18	-.10	-			
5. success in Finnish TRF	.31	.44	-.26	.28	-		
6. success in Finnish YSR	-.13	.25	.30	-.04	-.09	-	
7. number of years in special class			.17			.00	-
7th grade							
1. success in mathematics CBCL	-						
2. success in mathematics TRF	.56	-					
3. success in mathematics YSR	.05	.16	-				
4. success in Finnish CBCL	-.01	-.22	-.14	-			
5. success in Finnish TRF	-.30	-.50	-.32		-		
6. success in Finnish YSR	-.24	-.10	.44*	.01	.26	-	
7. number of years in special class	.20	.16	-.07	.55**	-.10	-.11	-

** . $p < .01$ *, $p < .05$.

The 7th grade parents' data demonstrates a moderate positive association between success in Finnish and number of years in a special class ($r_s(21) = .55, p < .01, r^2 = .30$). The longer students had been in a special class, the better those parents estimated students' Finnish skills when comparing them to the peer group, and vice versa. However, special class teachers generally teach only SEN students. Thus, there could be a tendency to evaluate SEN students' skills more positively than if the skills are compared to those of students in general education. The Spearman's rho test performed with the data collected for the purposes of this study revealed no other statistically significant connections between number of years in a special class and school success.

Then, we divided the data by grade and grouped students based on their background in a special class into one of three groups: 0–2 years, 2–4 years, and more than four years. We performed an independent-samples Kruskal-Wallis test to determine any possible difference between school success (when comparing SEN student's success in mathematics and Finnish to that of their peer group) and students' years in a special class. Data for third-grade students revealed that the Kruskal-Wallis test does not indicate any statistically significant differences regarding success in mathematics or Finnish based on students' number of years in a special class. Not enough data was collected from the third-grade parents and teachers to perform such analyses. Data collected from seventh-grade students, parents, and teachers revealed that the Kruskal-Wallis does not indicate any statistically

significant differences in school success based on students’ number of years in a special class. However, not enough data was acquired to compute seventh-grade teachers’ opinions about students’ success in Finnish.

Summary of students’ and adults’ views on school success

Research question Q1.2 asked whether a connection exists between special needs students’ duration in a special class and their school success. Hypothesis H1.2 predicted that students with special needs would be more successful in school if they had been in a mainstream class. Question Q1.2 was answered based on data collected from students, parents, and teachers before conducting the interventions. The results revealed no statistically significant differences between students’, parents’, or teachers’ conceptions of the students’ school success (in mathematics and Finnish) based students’ years in a special class or in a mainstream class. Thus, we rejected hypothesis H1.2 based on the data.

7.1.3 Connection between friends and students’ school success

Research question Q1.3 involved how many close friends the student with special needs had and the extent to which it was related to the students’ school success. Hypothesis H1.3 assumed that having friends contributed to students’ school success. To answer the question, descriptive statistics are presented concerning the students’ number of friends. Then, we ran a Spearman’s rho correlation test to discover any associations between school success and the students’ number of friends. Finally, we performed an independent-samples Kruskal-Wallis test to determine any differences in school success according to the number of close friends.

Forty-five students (75% of the total) provided data on the number of close friends. The number of close friends is presented in figure 8.

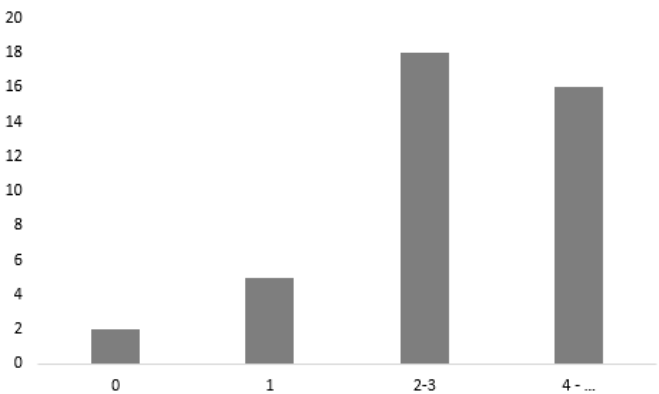


Figure 8
Students’ number of close friends

Next, we conducted a Spearman's rho correlation test with students' (YSR), parents' (CBCL), and teachers' (TRF) data to determine whether the students' number of friends was positively related with school success. The results did not reveal a statistically significant connection between school success and students' number of friends. Then, we ran an independent-samples Kruskal-Wallis test by dividing students into four groups according to the number of close friends (0, 1–2, 3–4, and more than four friends) to ascertain whether there was a difference in school success based on the number of friends. Again, the results showed that the students' number of close friends did not have an influence on students', parents', or teachers' opinions of students' school success.

Summary of close friends and school success

Research question Q1.3 addressed a possible connection between close friends and students' school success. Hypothesis H1.3 presumed that having friends correlated with students' school success. Data collected before the interventions from students, parents, and teachers provided an answer to the research question and hypothesis. The data showed no significant differences in students' school success based on how many close friends they reportedly have, if any at all, thus providing the grounds for rejecting hypothesis H1.3.

7.2 Well-being

Since this study assessed whether an optional intervention benefits students with special needs, information regarding students' well-being was collected from students (YSR) as well as their parents (CBCL) and teachers (TRF) before conducting the interventions. The well-being of the student was analyzed only based on pre-test data.

7.2.1 Students' well-being according to students, parents, and teachers

Research question Q2.1 concerned students' well-being before participated in the interventions. Hypothesis H2.1 assumed a connection between well-being and gender based on prior findings that teenage girls are more depressed than teenage boys. Thus, we described and analyzed all students' well-being before focusing specifically on students' gender and grade in school.

Well-being according to the whole sample

Students' well-being is presented here based on the same categories (internalizing symptoms, thought problems, social problems, attention problems, and externalizing symptoms) used with the ASEBA instrument. We conducted a Spearman's rho correlation test (see appendix 4) to determine any connections concerning students' (YSR), parents' (CBCL), and teachers' (TRF) views on students' well-

being. The Spearman correlation test indicated one significant result regarding students' social problems: a moderate positive association between parent-reported (CBCL) and teacher-reported (TRF) social problems, $r_s(21) = .48, p < .05, r^2 = .23$. Further, the Spearman test showed two significant results concerning externalizing symptoms: a moderate positive association between parent-reported (CBCL) aggressive behavior and teacher-reported (TRF) rule-breaking, $r_s(21) = .48, p < .05, r^2 = .23$, and parent-reported (CBCL) rule-breaking and teacher-reported rule-breaking, $r_s(21) = .50, p < .05, r^2 = .25$.

Then, we conducted a related-samples Wilcoxon signed-rank test to identify any possible differences between students' (YSR), parents' (CBCL), and teachers' (TRF) views concerning students' well-being. The internalizing symptoms category consisted of three sum variables (withdrawn-depressed, somatic complaints, and anxious-depressed). Descriptive statistics are presented in table 21.

Table 21. Descriptive statistics regarding parents' (CBCL), teachers' (TRF), and students' (YSR) opinions about students' internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) before the interventions were performed

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
withdrawn depressed							
CBCL	41	19	2.90	3.00	2.538	0	11
TRF	25	35	3.48	4.00	2.946	0	11
YSR	46	14	3.37	2.00	2.611	0	11
somatic complain							
CBCL	41	19	1.98	1.00	1.930	0	9
TRF	25	35	0.92	0.00	1.470	0	6
YSR	46	14	2.74	2.00	2.792	0	10
anxious depressed							
CBCL	41	19	3.66	3.00	3.447	0	14
TRF	25	35	4.44	4.00	4.224	0	15
YSR	46	14	5.07	3.00	5.810	0	26

We first ran the test with a focus on internalizing symptoms. The test results revealed that students' (YSR) median scores with respect to somatic complaints were statistically significantly higher than teachers' reported (TRF) median scores regarding somatic complaints ($T = 189.5, z = 20.5, p < .002$). In addition, the Wilcoxon test indicated that teacher-reported (TRF) median scores regarding somatic complaints were statistically significantly lower than parent-reported (CBCL) median scores ($T = 30, z = -2.003, p < .05$).

Students' (YSR), parents' (CBCL), and teachers' (TRF) descriptive statistics concerning thought problems, social problems, and attention problems are reported in table 22.

Table 22. Descriptive statistics regarding parents' (CBCL), teachers' (TRF), and students' (YSR) opinions about students' thought problems, social problems, and attention problems before the interventions were performed

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
thought problems							
CBCL	43	17	0.98	1.00	1.371	0	5
TRF	25	35	1.00	0.00	2.041	0	8
YSR	46	14	2.46	2.00	2.689	0	14
social problems							
CBCL	41	19	3.83	3.00	2.949	0	10
TRF	25	35	3.64	2.00	4.030	0	17
YSR	46	14	3.04	2.00	2.789	0	13
attention problems							
CBCL	41	19	6.66	6.00	3.909	0	16
TRF	25	35	12.04	10.00	7.408	1	32
YSR	46	14	6.02	6.00	3.116	0	15

The Wilcoxon test revealed two significant results concerning thought problems. First, students' (YSR) median scores with respect to thought problems were statistically significantly higher than parent-reported (CBCL) median scores regarding thought problems ($T = 57.000$, $z = 57.0$, $p < .001$). Second, students' (YSR) median scores with respect to thought problems were statistically significantly higher than teacher-reported (TRF) median scores regarding thought problems ($T = 65.5$, $z = -2.219.5$, $p < .05$). In addition, the Wilcoxon test revealed two significant results concerning students' attention problems. First, students' (YSR) median scores for attention problems were statistically significantly lower than teacher-reported (TRF) median scores for attention problems ($T = 34.5$, $z = -3.303$, $p < .001$). Second, parent-reported (CBCL) median scores for attention problems were statistically significantly lower than teacher-reported (TRF) median scores for attention problems ($T = 43.5$, $z = -2.880$, $p < .01$).

Externalizing symptoms consisted of aggressive behavior and rule-breaking behavior. Descriptive statistics are presented in table 23.

Table 23. Descriptive statistics regarding parents' (CBCL), teachers' (TRF), and students' (YSR) opinions about students' externalizing symptoms (aggressive behavior and rule-breaking behavior) before the interventions were performed

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
aggressive behavior							
CBCL	41	19	7.41	7.00	6.004	0	27
TRF	25	35	6.88	3.00	10.105	0	38
YSR	46	14	8.67	7.00	5.869	0	28
rule-breaking behavior							
CBCL	41	19	2.34	2.00	2.466	0	8
TRF	25	35	1.84	0.00	2.838	0	9
YSR	46	14	3.52	3.00	2.957	0	13

We conducted a Wilcoxon test on externalizing symptoms (aggressive behavior and rule-breaking behavior). The test indicated that parent-reported (CBCL) median scores for rule-breaking behavior were statistically significantly higher than teacher-reported (TRF) median scores for attention problems ($T = 96.0$, $z = 2.019$, $p < .05$).

Then, we performed a Spearman's rho test to determine any possible connections regarding well-being (internalizing symptoms, thought problems, social problems, attention problems, and externalizing symptoms) based on the data obtained from students (YSR), parents (CBCL), and teachers (TRF) (appendix 4). Internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) exhibited many statistically significant relations with other symptoms. First, the Spearman correlation test indicated a positive moderate association between teacher-reported scores for withdrawn-depressed symptoms (TRF) and parent-reported scores for aggressive behavior (CBCL). Second, the Spearman test showed a relatively strong positive association between anxious-depressed symptoms and thought problems based on the data obtained from students (YSR), parents (CBCL), and teachers (TRF). Third, the data obtained from students (YSR) and parents (CBCL) revealed a strong positive association between anxious-depressed symptoms and attention problems. However, teachers' data did not reveal a statistically significant association between anxious-depressed symptoms (TRF) and attention problems (TRF).

In addition, social problems (YSR, CBCL), had a strong positive association with attention problems (YSR, CBCL). However, the data obtained from teachers (TRF) shows that the positive association between social problems (TRF) and attention problems (TRF) was only relatively strong. Moreover, social problems (CBCL and TRF) had a relatively strong positive association with aggressive behavior (CBCL and TRF). Based on students' data, the positive association between social problems (YSR) and aggressive behavior (YSR) was only moderate, though.

Well-being according to gender

As was hypothesized in H2.1, well-being should differ based on students' gender. Thus, gender and its connection with students' well-being was first outlined via descriptive statistics and then analyzed using a related-samples Wilcoxon signed-rank test.

Descriptive statistics based on students' gender and internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) are presented in table 24.

Table 24. Descriptive statistics based on students' gender regarding students' internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) based on data acquired from parents (CBCL), teachers (TRF), and students (YSR) before the interventions were performed

Internalizing symptoms	N		M	Md	SD	Min	Max
	Valid	Missing					
withdrawn depressed							
boy							
CBCL	30	15	3.23	3.00	2.750	0	11
TRF	18	27	3.61	3.50	3.071	0	11
YSR	34	11	3.44	2.00	2.596	0	10
girl							
CBCL	11	4	2.00	2.00	1.612	0	5
TRF	7	8	3.14	4.00	2.795	0	7
YSR	12	3	3.17	2.50	2.758	0	11
somatic complaints							
boy							
CBCL	30	15	1.70	1.00	1.442	0	5
TRF	18	27	1.06	0.50	1.662	0	6
YSR	34	11	2.85	2.50	2.664	0	10
girl							
CBCL	11	4	2.73	3.00	2.832	0	9
TRF	7	8	0.57	0.00	0.787	0	2
YSR	12	3	2.42	1.50	3.232	0	9
anxious depressed							
boy							
CBCL	30	15	3.63	3.00	3.596	0	14
TRF	18	27	4.61	4.00	4.461	0	15
YSR	34	11	5.00	3.00	6.179	0	26
girl							
CBCL	11	4	3.73	4.00	3.165	0	9
TRF	7	8	4.00	4.00	3.830	0	10
YSR	12	3	5.25	5.00	4.845	1	18

To determine any significant differences concerning internalizing symptoms, we performed a related-samples Wilcoxon signed-rank test. The test yielded three significant results concerning somatic complaints. First, boys' (YSR) median scores with respect to somatic complaints were statistically significantly higher than teacher-reported (TRF) median scores regarding boys' somatic complaints ($T = 14.0, z = -2.621, p < .01$). Second, parent-reported (CBCL) median scores for boys' somatic complaints were statistically significantly higher than teacher-reported (TRF) median scores regarding boys' somatic complaints, $z = 92.0, p = .013$ ($N=16$). Third, girls' (YSR) median scores with respect to somatic complaints were statistically significantly higher than teacher-reported (TRF) median scores regarding girls' somatic complaints, $z = 15.0, p = .043$ ($N=7$). In addition, we discovered a significant difference in anxious-depressed symptoms when girls' (YSR) median scores for anxious-depressed symptoms were statistically significantly higher than parent-reported (CBCL) median scores regarding girls' anxious-depressed symptoms ($T = 6.0, z = -1.960, p = .050$).

The mean scores for thought problems, social problems, and attention problems are described in table 25.

Table 25. Descriptive statistics based on students' gender regarding students' thought problems, social problems, and attention problems based on data acquired from parents (CBCL), teachers (TRF), and students (YSR) before the interventions were performed

Variable	N		M	Md	SD	Min	Max
	Valid	Missing					
thought problems							
boy							
CBCL	32	13	1.09	0.50	1.532	0	5
TRF	18	27	0.83	0.00	1.618	0	6
YSR	34	11	2.41	2.00	2.893	0	14
girl							
CBCL	11	4	0.64	1.00	0.674	0	2
TRF	7	8	1.43	0.00	2.992	0	8
YSR	12	3	2.58	2.00	2.109	0	5
social problems							
boy							
CBCL	30	15	3.87	3.00	3.093	0	10
TRF	18	27	3.83	2.00	4.449	0	17
YSR	34	11	2.82	2.00	2.599	0	12
girl							
CBCL	11	4	3.73	4.00	2.649	0	8
TRF	7	8	3.14	3.00	2.911	0	9
YSR	12	3	3.67	3.00	3.312	1	13
attention problems							
boy							
CBCL	30	15	7.07	6.50	4.093	0	16
TRF	18	27	13.50	14.50	7.672	1	32
YSR	34	11	5.76	6.00	3.016	0	13
girl							
CBCL	11	4	5.55	6.00	3.267	0	10
TRF	7	8	8.29	6.00	5.469	3	16
YSR	12	3	6.75	6.50	3.415	2	15

We conducted a Wilcoxon test to assess thought problems, social problems, and attention problems. The test revealed three significant differences concerning thought problems. First, boys' (YSR) median scores with respect to thought problems were statistically significantly higher than parent-reported (CBCL) median scores regarding boys' thought problems ($T = 182.0$, $z = 2.327$ $p < .05$). Second, girls' (YSR) median scores with respect to thought problems were statistically significantly higher than parent-reported (CBCL) median scores regarding girls' thought problems ($T = 21.0$, $z = 2.232$ $p < .05$). Third, boys' (YSR) median scores with respect to thought problems were statistically significantly higher than teacher-reported (TRF) median scores regarding boys' thought problems ($T = 35.0$, $z = -1.981$ $p < .05$). The results also revealed three significant differences concerning attention problems. First, girls' (YSR) median scores with respect to attention problems were statistically significantly higher than parent-reported (CBCL) median scores regarding girls' attention problems ($T = 34.0$, $z = 7.098$ $p < .05$). Second, boys' (YSR) median scores with respect to attention problems were statistically significantly lower than teacher-reported (TRF) median scores regarding boys' attention problems ($T = 157.0$, $z = 3.117$ $p < .01$). Third, boys' parent-reported (CBCL) median scores with respect to attention problems were statistically significantly lower than teacher-reported (TRF) median scores regarding boys' attention problems ($T = 16.0$, $z = -2.696$ $p < .01$).

Externalizing symptoms based on students' gender are reported in table 26.

Table 26. Descriptive statistics based on students' gender regarding students' externalizing symptoms (aggressive behavior and rule-breaking behavior) based on data acquired from parents (CBCL), teachers (TRF), and students (YSR) data before the interventions were performed

Externalizing symptoms	N		M	Md	SD	Min	Max
	Valid	Missing					
aggressive behavior							
boy							
CBCL	30	15	7.97	7.50	6.408	0	27
TRF	18	27	8.78	3.00	11.317	0	38
YSR	34	11	8.62	7.00	6.040	0	28
girl							
CBCL	11	4	5.91	4.00	4.657	1	15
TRF	7	8	2.00	1.00	2.646	0	7
YSR	12	3	8.83	8.00	5.606	1	17
rule-breaking behavior							
boy							
CBCL	30	15	2.67	2.50	2.670	0	8
TRF	18	27	2.33	0.50	3.199	0	9
YSR	34	11	3.76	3.00	3.124	0	13
girl							
CBCL	11	4	1.45	1.00	1.572	0	4
TRF	7	8	0.57	0.00	0.787	0	2
YSR	12	3	2.83	3.00	2.406	0	7

The Wilcoxon test results revealed no statistically significant differences in externalizing symptoms (aggressive behavior and rule-breaking behavior) between students, parents, and teachers.

Summary of students', parents', and teachers' opinions concerning well-being of the student

Research question Q2.1 inquired as to whether students, parents, and teachers had similar opinions concerning students' well-being and whether they had noted any differences between boys and girls. Hypothesis H2.1 assumed that adolescent girls are more depressed than adolescent boys. Thus, it was hypothesized that well-being is related to gender. We answered the question using data collected from students, parents, and teachers before conducting the interventions.

We detected no significant differences between students', parents', and teachers' opinions regarding the four well-being items (withdrawn-depressed, anxious-depressed, social problems, and aggressive behavior). Instead, the data revealed significant differences in somatic complaints, with teacher-reported scores being significantly lower than students' self-reported scores and parent-reported scores. In addition, students had significantly higher scores in thought problems compared to parent-reported scores and teacher-reported scores. In addition, teacher-reported scores for attention problems were significantly higher than students' self-reported scores and parent-reported scores. In this study, parent-reported scores for rule-breaking behavior were significantly higher than teacher-reported scores. As a result, students, parents, and teachers had similar conception of

students' well-being concerning withdrawn-depressed symptoms, anxious-depressed symptoms, social problems, and aggressive behavior. However, their opinions differed with respect to somatic complaints, thought problems, attention problems, and rule-breaking behavior.

Since hypothesis H2.1 assumed a correlation between well-being and gender, we conducted analyses based on students' gender, with the results confirming this hypothesis. First, though girls' scores for somatic complaints were not significantly different than parent-reported and teacher-reported scores, the boys' self-reported scores and parent-reported scores for boys' somatic complaints were significantly higher than the teacher-reported scores for boys' somatic complaints. With respect to anxious-depressed symptoms and attention problems, the data only revealed significant differences between girls' self-reported scores and parent-reported scores for girls. Boys' self-reported scores and parent-reported scores for boys' attention problems were significantly lower than teacher-reported scores for boys' attention problems. Boys' self-reported scores for thought problems were significantly higher than parent-reported scores for boys' thought problems or teacher-reported scores for boys' thought problems.

Based on the results, hypothesis H2.1 proved invalid. First, the data revealed no statistically significant differences between girls and boys concerning externalizing symptoms (aggressive behavior and rule-breaking behavior). Second, both boys and girls had significantly higher scores relating to thought problems compared to their parents' scores.

Though hypothesis H2.1, which postulated that well-being is related to gender concerning withdrawn-depressed symptoms, social problems, aggressive behavior, and rule-breaking behavior, was ultimately rejected, the data did show significant differences between boys and girls in other respects. Thus, the hypothesis was retained, with modifications, concerning somatic complaints, anxious-depressed symptoms, thought problems, and attention problems.

7.2.2 Connection between special class education and well-being

Research question Q2.2 involved students' well-being and its connection to length of time in special class education. Hypothesis H2.2 assumed the well-being of seventh-grade girls is lower than that of seventh-grade boys or third-grade students. Moreover, based on the assumption that the interventions benefit younger students more than older students, the well-being of third-grade students should be better after being placed in a special class as part of a pedagogical intervention. This question was answered based on data collected from students (YSR), parents (CBCL), and teachers (TRF) before the intervention programs. The scale for students' years in a special class was *1 = 0–2 years*, *2 = 3–4 years*, *3 = more than four years*. Since the students in this study were in two grades, we split the data by grade before conducting the analyses.

Internalizing symptoms

When assessing students by grade, the Spearman's rho correlation test did not indicate any connection between students' years in a special class and withdrawn-depressed symptoms, somatic complaints, and anxious-depressed symptoms.

When assessing students by gender, the Spearman correlation test showed a very strong significant negative association between seventh-grade girls' years in a special class and parent-reported scores for withdrawn-depressed symptoms (CBCL) ($r_s(6) = -.82, p < .05, r^2 = .67$). The Spearman test likewise revealed a significant strong negative association between seventh-grade girls' years in a special class and teacher-reported scores for anxious-depressed symptoms (TRF) ($r_s(3) = -.73, p < .05, r^2 = .53$). However, the Kruskal-Wallis test did not indicate any statistically significant differences between seventh-grade girls' parent-reported scores for withdrawn-depressed symptoms (CBCL) or teacher-reported scores for anxious-depressed symptoms (TRF) based on the girls' years in special class education.

The Spearman test showed a significant strong negative association between seventh-grade girls' years in a special class and anxious-depressed symptoms (YSR) ($r_s(7) = -.79, p < .05, r^2 = .62$). Based on this data, the Kruskal-Wallis test likewise indicated that number of years in special class affects seventh-grade girls' anxious-depressed symptoms (YSR) ($H(2) = 6.508, p = .039$). The significant difference was between seventh-grade girls with more than four years in a special class ($Mdn = 2.00$) and seventh-grade girls with 3–4 years in a special class ($Mdn = 9.00$). After conducting post-hoc Mann-Whitney tests for multiple comparisons, this difference indeed proved significant (adjusted $p = .035$).

Thought problems, social problems, and attention problems

When assessing students by grade, the Spearman's rho correlation test did not indicate any association between students' years in a special class and thought problems, social problems, and attention problems. In addition, the Kruskal-Wallis test did not reveal any significant differences in students' thought problems, social problems, and attention problems based on students' grade and years in a special class.

When assessing students by gender, the Spearman test indicated a strong negative association between seventh-grade girls' years in a special class and attention problems (YSR) ($r_s(7) = -.73, p < .05, r^2 = .53$). Based on this data, the Kruskal-Wallis test likewise indicated that number of years in a special class affects seventh-grade girls' attention problems (YSR) ($H(2) = 6.142, p = .046$). The significant difference was between seventh-grade girls with more than four years in a special class ($Mdn = 6.00$) and seventh-grade girls with 3–4 years in a special class ($Mdn = 9.00$). After conducting post-hoc Mann-Whitney tests for multiple comparisons, this difference indeed proved significant (adjusted $p = .040$).

Externalizing symptoms

The Spearman's rho correlation test conducted based on grade revealed no statistically significant association between students' years in a special class and aggressive behavior or rule-breaking behavior. In addition, the Kruskal-Wallis test did not reveal any significant differences in students' aggressive behavior or rule-breaking behavior based on their grade and years in a special class.

When assessing students by gender, the Spearman test showed a very strong negative association between seventh-grade girls' years in a special class and parent-reported scores for aggressive behavior (CBCL) ($r_s(6) = -.83, p < .05, r^2 = .69$). In addition, the Spearman test revealed a very strong negative association between seventh-grade girls' years in a special class and parent-reported scores for rule-breaking behavior (CBCL) ($r_s(6) = -.87, p < .01, r^2 = .76$). However, the Kruskal-Wallis test revealed no statistically significant differences in parent-reported scores for aggressive behavior (CBCL) or parent-reported scores for rule-breaking behavior (CBCL). Additionally, the Spearman test indicated a very strong negative association between seventh-grade girls' years in a special class and rule-breaking behavior (YSR) ($r_s(7) = -.90, p < .01, r^2 = .81$). Based on this data, the Kruskal-Wallis test showed that number of years in a special class affects seventh-grade girls' rule-breaking behavior (YSR) ($H(2) = 6.560, p = .038$). The significant difference was between seventh-grade girls with more than four years in a special class ($Mdn = 3.00$) and seventh-grade girls with 3–4 years in a special class ($Mdn = 4.00$). After conducting post-hoc Mann-Whitney tests for multiple comparisons, this difference proved insignificant (adjusted $p = .095$).

Summary of special class years and well-being of the student

Research question Q2.2 involved students' well-being and its connection to length of time in special class education. Hypothesis H2.2 assumed that seventh-grade girls tend to have lower scores for withdrawn-depressed symptoms and anxious-depressed symptoms than seventh-grade boys or third-grade students and that third-grade students tend to have a better sense of well-being after being placed in a special class as part of a pedagogical intervention.

The data revealed a strong negative association between seventh-grade girls' scores for withdrawn-depressed symptoms and anxious-depressive symptoms and years in a special class. The data revealed a similar result for seventh-grade boys. Seventh-grade girls who had been in a special class for four years or more had significantly lower anxious-depressed symptom scores compared to girls with 3–4 years in a special class. However, the sample size was small. In addition, the data showed that seventh-grade girls who had been in a special class for more than four years had lower scores for attention problems than girls with 3–4 years in a special class. The data did not show similar results for seventh-grade boys. We also found that the longer seventh-grade girls had been in a special class, the lower their aggressive behavior scores and rule-breaking behavior scores. Given the

assumption of hypothesis H2.2. that students' gender and well-being are linked to number of years in school, the data did indeed reveal that seventh-grade girls seemingly benefit the longer they have studied in special class education. Thus, the data supports hypothesis H2.2.

Hypothesis H2.2 likewise made the assumption that pedagogical interventions as a form of special class placement impact younger third-grade students more than older students. We did not acquire enough valid data from parents and teachers to test such an assumption, though. The students' data, for its part, did not reveal any significant differences in well-being based on number of years in special class education. Thus, the data did not show a statistically significant correlation between the number of years in a special class and the well-being of third-grade students. Thus, we rejected hypothesis H2.2 based on the finding that special class placement does not strongly impact younger students' well-being.

7.2.3 Connection between social relations and well-being

Research question Q2.3 involved students' well-being and its connection to their social relations with parents, siblings, peer group (*1 = worse compared to peer group, 2 = average compared to peer group, 3 = better compared to peer group*) and number of friends (*1 = none, 2 = one friend, 2 = 2–3 friends, and 4 = four or more friends*). Hypothesis H2.3 assumed a difference in well-being when students' social relations are considered. With the starting point that girls are generally more empathic than boys, the hypothesis assumed that girls are less aggressive. Further, it is also based on the premise that students with good relations with their siblings are less aggressive. This question regarding the association between social relations and well-being was answered based on data collected from students (YSR), parents (CBCL), and teachers (TRF) before the intervention programs began. First, we conducted a Spearman's rho correlation test to assess internalizing symptoms, thought problems, social problems, attention problems, and externalizing symptoms based on student's social relations with their parents, siblings, peer group, and students' number of best friends. Then, we performed an independent-samples Kruskal-Wallis test to assess the same well-being symptoms. The data were grouped based students' relations with their parents, siblings, and peer group (doing worse than, the same as, or better than the peer group).

Well-being and relations with parents

Internalizing symptoms

The Spearman's rho correlation test did not reveal any statistically significant associations across the entire sample between students' relations with their parents and internalizing symptoms (withdrawn-depressed, somatic complaints, and

anxious-depressed). However, the Kruskal-Wallis test showed a statistically significant difference in girls' withdrawn-depressed symptoms (YSR) based on their relations with their parents ($H(2) = 6.435, p = .040$). The difference in withdrawn-depressed symptoms (YSR) pertained to girls who had better relations ($Mdn = 1.50$) as opposed to average relations ($Mdn = 4.00$) with their parents. After introducing a Bonferroni correction for multiple comparisons, this difference proved significant (adjusted $p = .037$). Further, the Kruskal-Wallis test showed a significant difference in seventh-grade students' teacher-reported scores for withdrawn-depressed symptoms (TRF) based on relations with their parents ($H(2) = 10.41, p = .005$). We then conducted post-hoc Mann-Whitney tests using Bonferroni-adjusted alpha to compare all groups. The difference in withdrawn-depressed symptoms between students was most noticeable among those who had average relations with their parents ($Mdn = 5.00$) versus those with better relations with their parents ($Mdn = 4.00$) (adjusted $p = .005$).

Thought problems, social problems, and attention problems

The Spearman correlation test revealed a significant weak negative association between students' relations with their parents and parent-reported scores for attention problems (CBCL) ($r_s(38) = -.33, p < .05, r^2 = .11$). However, the Kruskal-Wallis test did not show any significant difference in thought problems, social problems, and attention problems regarding students' relations with their parents.

Externalizing symptoms

The Spearman test did not reveal any significant associations between externalizing symptoms (aggressive behavior and rule-breaking behavior) and students' relations with parents. In addition, the Kruskal-Wallis test did not reveal any differences in externalizing symptoms based on students' relations with their parents.

Well-being and relations with siblings

Internalizing symptoms

The Spearman correlation test on internalizing symptoms revealed a significant weak negative relationship between students' relations with their siblings and anxious-depressed symptoms (YSR) ($r_s(30) = -.35, p < .05, r^2 = .12$). When assessing students by gender, however, the Spearman test revealed a significant moderate positive association between boys' relations with their siblings and parent-reported scores for anxious-depressed symptoms (CBCL) ($r_s(23) = .40, p < .05, r^2 = .16$). Further, the Spearman test indicated a strong negative association between girls' relations with their siblings and anxious-depressed symptoms (YSR) ($r_s(7) = -.74, p < .05, r^2 = .55$).

Thought problems, social problems, and attention problems

The Spearman's rho correlation test did not reveal any significant associations between students' relations with their siblings and thought problems, social problems, or attention problems. In addition, the Kruskal-Wallis test did not indicate any significant differences concerning thought problems, social problems, and attention problems based on students' relations with their siblings. Additionally, the tests did not reveal any statistically significant differences based on students' gender and grade.

Externalizing symptoms

The tests revealed a moderate positive association between relations with siblings and teacher-reported scores for aggressive behavior (TRF) ($r_s(14) = .50, p < .01, r^2 = .25$). The Kruskal-Wallis test did not reveal any significant differences in students' aggressive behavior based on relations with their siblings when assessing the data based on the whole sample, by gender, or by students' grade level.

Well-being and relations with peer group

Internalizing symptoms

When assessing students' internalizing symptoms, the Spearman correlation test indicated a statistically significant negative weak association between students' relations with their peer group and parent-reported scores for anxious-depressed symptoms (CBCL) ($r_s(38) = -.31, p < .05, r^2 = .10$). Further, it revealed a significant moderate negative association between boys' relations with their peer group and parent-reported scores for anxious-depressed symptoms (CBCL) ($r_s(27) = .45, p < .05, r^2 = .20$). However, the Kruskal-Wallis test did not indicate any statistically significant difference in internalizing symptoms based on students' relationship with their peer group.

Thought problems, social problems, and attention problems

A Spearman test conducted on the whole sample revealed a significant moderate negative association between students' social relations with a subgroup and teacher-reported scores for thought problems (TRF) ($r_s(21) = -.44, p < .05, r^2 = .19$). Further, the Spearman test indicated a very strong negative association between girls' relations with their peer group and thought problems (YSR) ($r_s(5) = -.87, p < .05, r^2 = .76$).

Accordingly, the Kruskal-Wallis test revealed two significant differences in teacher-reported scores for thought problems (TRF) based on students' relations with their peer group ($H(2) = 8.181, p = .017$). The differences in thought problems pertained to students with better ($Mdn = 0.00$) as opposed to worse ($Mdn = 3.00$) relations with their peer group. After correcting for multiple comparisons,

the difference proved significant (adjusted $p = .020$). Another difference emerged between students with average ($Mdn = 0.00$) as opposed to worse ($Mdn = 3.00$) relations with their peer group. After correcting for multiple comparisons, the difference proved significant (adjusted $p = .024$).

When assessing students by grade, the Kruskal-Wallis test revealed two significant differences in teacher-reported scores for thought problems (TRF) with respect to seventh-grade students' relations with their peer group ($H(2) = 7.525$, $p = .023$). The first difference was between students with better ($Mdn = 0.00$) as opposed to worse ($Mdn = 3.00$) relations with their peer group. After correcting for multiple comparisons, this difference proved significant (adjusted $p = .026$). The second difference was between students with average ($Mdn = 0.00$) as opposed to worse ($Mdn = 3.00$) relations with their peer group. After correcting for multiple comparisons, this difference did not prove significant (adjusted $p = .066$). Furthermore, the Kruskal-Wallis test using students' data also indicated a difference in seventh-grade students' thought problems (YSR) ($H(2) = 6.605$, $p = .037$). The first difference was between students with average ($Mdn = 0.50$) as opposed to better ($Mdn = 2.50$) relations with their peer group. The difference did not prove significant, though (adjusted $p = .092$). The second difference was between students with average ($Mdn = 0.50$) as opposed to worse ($Mdn = 4.00$) relations with their peer group. Again, after correcting for multiple comparisons, this difference did not prove significant (adjusted $p = .084$).

Externalizing symptoms

The Spearman test did not indicate any associations between externalizing symptoms and students' relations with their peer group. In addition, the Kruskal-Wallis test did not reveal any differences in externalizing symptoms based on students' relations with their peer group.

Well-being and number of close friends

Internalizing symptoms

The Spearman's rho correlation test indicated a significant moderate negative association between the students' number of close friends and students' withdrawn-depressed symptom (YSR) ($r_s(32) = -.48$, $p < .01$, $r^2 = .23$). In addition, it revealed a significant weak negative association between the students' number of close friends and parent-reported scores for anxious-depressed symptom (CBCL) ($r_s(39) = -.34$, $p < .05$, $r^2 = .12$). The Kruskal-Wallis test likewise revealed a significant difference in withdrawn-depressed symptom (YSR) based on the students' number of close friends ($H(3) = 9.282$, $p = .026$). The first difference was between students with four or more friends ($Mdn = 1.50$) and those with one friend ($Mdn = 9.00$). After applying the Bonferroni correction for multiple comparisons, the

difference proved significant (adjusted $p = .029$). The second difference was between students with 2–3 friends ($Mdn = 1.50$) and students with one friend ($Mdn = 9.00$). After correcting for multiple comparisons, the difference proved insignificant (adjusted $p = .241$). The Kruskal-Wallis test also indicated a significant difference based on the students' number of close friends and parent-reported scores for somatic complaints (CBCL) ($H(3) = 8.698, p = .034$). The difference was between students with no friends ($Mdn = 0.50$) and those with one friend ($Mdn = 3.00$). After correcting for multiple comparisons, this difference proved insignificant ($p = .110$). Another difference emerged between students with 2–3 friends ($Mdn = 1.00$) and students with one friend ($Mdn = 3.00$). After correcting for multiple comparisons, this difference proved significant (adjusted $p = .050$).

When assessing students by gender, we found a significant very strong positive association between the number of close friends and teacher-reported scores for girls' withdrawn-depressed symptoms (TRF) ($r_s(5) = .80, p < .05, r^2 = .64$) and based on students' data (YSR) ($r_s(7) = .80, p < .01, r^2 = .64$). In addition, teacher-reported scores for girls' somatic complaints (TRF) had a strong positive association with girls' number of close friends ($r_s(5) = .77, p < .05, r^2 = .59$). The Spearman test showed a significant moderate association between boys' number of close friends and parent-reported scores for anxious-depressed symptoms (CBCL) ($r_s(28) = .42, p < .05, r^2 = .18$). The Kruskal-Wallis test revealed that a significant difference in parent-reported scores for somatic complaints (CBCL) based on girls' number of close friends ($H(3) = 9.282, p = .049$). It also revealed a difference between girls who had 2–3 friends ($Mdn = 0.50$) and girls with one friend ($Mdn = 6.00$). After performing a Bonferroni correction for multiple comparisons, this difference proved significant (adjusted $p = .043$).

When assessing students by grade, the Kruskal-Wallis test revealed a significant difference in withdrawn-depressed symptoms (YSR) based on seventh-grade students' number of close friends ($H(3) = 8.336, p = .040$). The difference was between seventh-grade students with four or more friends ($Mdn = 1.50$) and those with one friend ($Mdn = 9.00$). This difference proved significant (adjusted $p = .040$). Another difference was between seventh-grade students with 2–3 friends ($Mdn = 1.50$) and those with one friend ($Mdn = 1.50$). After performing a Bonferroni correction for multiple comparisons, the difference proved insignificant (adjusted $p = .248$).

Thought problems, social problems, and attention problems

The Spearman's rho correlation test indicated a moderate negative association between students' number of close friends and parent-reported scores for social problems (CBCL) ($r_s(39) = -.57, p < .01, r^2 = .32$). In addition, the Spearman test showed a moderate negative association between students' number of close friends and parent-reported scores for attention problems (CBCL) ($r_s(39) = -.51, p < .01, r^2 = .26$). The Kruskal-Wallis test indicated a significant difference in

parent-reported scores for social problems (CBCL) based on the students' number of best friends ($H(3) = 15.260, p = .002$). The difference was between students with four or more friends ($Mdn = 2.00$) and students with one friend ($Mdn = 9.00$). After performing a Bonferroni correction for multiple comparisons, this difference proved significant (adjusted $p = .003$). Another difference was between students with 2–3 friends ($Mdn = 2.50$) and students with one friend ($Mdn = 9.00$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .072$). In addition, the Kruskal-Wallis test showed a significant difference in parent-reported scores for attention problems (CBCL) based on the students' number of close friends ($H(3) = 11.653, p = .009$). The difference was between students with four or more friends ($Mdn = 5.00$) and students with one friend ($Mdn = 8.00$). Another difference was between students with four or more friends ($Mdn = 5.00$) and students with no friends ($Mdn = 12.00$). After performing a Bonferroni correction for multiple comparisons, this difference proved significant (adjusted $p = .043$).

When assessing students by gender, the Spearman's rho correlation test indicated a moderate negative association between boys' number of close friends and parent-reported scores for social problems (CBCL) ($r_s(28) = -.59, p < .01, r^2 = .35$). The Kruskal-Wallis test revealed a significant difference in parent-reported scores for social problems (CBCL) based on the boy's number of close friends ($H(3) = 10.874, p = .012$). The first difference was between boys with four or more friends ($Mdn = 1.50$) and boys with no friends ($Mdn = 7.50$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .113$). Another difference was between boys with four or more friends ($Mdn = 1.50$) and boys with one friend ($Mdn = 8.50$). After correcting for multiple comparisons, this difference likewise proved insignificant (adjusted $p = .075$). Though the Spearman test did not show any statistically significant relationship between girls' number of close friends and social problems, the Kruskal-Wallis test revealed a significant difference in girls' parent-reported scores for social problems (CBCL) based on the girls' number of close friends ($H(2) = 6.445, p = .040$). The first difference was between girls with four or more friends ($Mdn = 3.00$) and girls with one friend ($Mdn = 7.00$). After performing a Bonferroni test for multiple comparisons, this difference proved insignificant (adjusted $p = .132$). The second difference was between girls with 2–3 friends ($Mdn = 2.00$) and girls with one friend ($Mdn = 7.00$). After correcting for multiple comparisons, this difference proved statistically significant (adjusted $p = .047$). The boys' number of friends exhibited a strong negative association with parent-reported scores for attention problems (CBCL) ($r_s(28) = -.62, p < .01, r^2 = .38$). The Kruskal-Wallis test revealed a significant difference in boys' parent-reported scores for attention problems (CBCL) based on the boys' number of close friends ($H(2) = 11.320, p = .010$). The first difference was between boys with four or more friends ($Mdn = 5.00$) and boys with 2–3 friends ($Mdn = 9.50$). When correcting for multiple comparisons,

this difference proved insignificant (adjusted $p = .064$). Another difference was between boys with four or more friends ($Mdn = 5.00$) and boys with no friends ($Mdn = 12.00$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .053$).

When assessing students by grade, the Kruskal-Wallis test showed a significant difference in seventh-grade students' parent-reported scores for social problems (CBCL) based on the students' number of close friends ($H(3) = 9.293$, $p = .026$). The first difference was between seventh-grade students with four or more friends ($Mdn = 3.00$) and students with one friend ($Mdn = 7.50$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .067$). The second difference was between seventh-grade students with 2–3 friends ($Mdn = 2.00$) and students with one friend ($Mdn = 7.50$) ($H(3) = 10.10$, $p = .011$). After correcting for multiple comparisons, this difference did not prove statistically significant (adjusted $p = .067$). When assessing students based on the number of close friends, the Kruskal-Wallis test indicated that third-grade students' teacher-reported scores for social problems (TRF) were significantly lower for students with four or more friends ($Mdn = 1.00$) compared to students with 2–3 close friends ($Mdn = 5.00$) ($H(1) = 4.408$, $p = .036$). In addition, the number of close friends was related to third-grade students' parent-reported scores for attention problems (CBCL) ($H(3) = 9.826$, $p = .020$). The difference was notable between students with four or more friends ($Mdn = 4.00$) and students with 2–3 friends ($Mdn = 9.50$). After correcting for multiple comparisons, this difference indeed proved significant (adjusted $p = .050$). The other difference was between students with four or more friends ($Mdn = 4.00$) and students with no friends ($Mdn = 12.00$). After correcting for multiple comparisons, this difference did not prove statistically significant (adjusted $p = 1.000$).

Externalizing symptoms

The Spearman's test identified a weak negative association between students' number of close friends and aggressive behavior (CBCL) ($r_s(39) = -.38$, $p < .05$, $r^2 = .14$). However, the Kruskal-Wallis test did not reveal any statistically significant difference in students' aggressive behavior based on their number of close friends.

When assessing students by gender, the Spearman's test found a weak negative association between boys' number of close friends and parent-reported scores for aggressive behavior (CBCL) ($r_s(28) = -.37$, $p < .05$, $r^2 = .14$). The Kruskal-Wallis test, though, did not reveal any statistically significant difference in boys' aggressive behavior based on their number of close friends.

When assessing students by grade, the Spearman's test revealed two statistically significant associations based on students' number of close friends and aggressive behavior. First, there was a strong negative association between third-grade students' number of close friends and parent-reported scores for aggressive

behavior (CBCL) ($r_s(16) = -.68, p < .01, r^2 = .46$). Second, the test found a strong negative association between third-grade students' number of close friends and teacher-reported scores for aggressive behavior (TRF) ($r_s(7) = -.69, p < .05, r^2 = .48$). In addition, the Spearman's test found a moderate negative association between third-grade students' number of close friends and parent-reported scores for rule-breaking behavior (CBCL) ($r_s(16) = -.48, p < .01, r^2 = .23$). The Kruskal-Wallis test revealed a significant difference in third-grade students' parent-reported scores for aggressive behavior (CBCL) based on the students' number of close friends ($H(3) = 8.363, p = .039$). The first notable difference was between students with four or more friends ($Mdn = 2.50$) and students with 2–3 friends ($Mdn = 11.50$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .127$). The second difference was between third-grade students with four or more friends ($Mdn = 2.50$) and students with no friends ($Mdn = 27.0$). After performing a Bonferroni correction for multiple comparisons, this difference proved insignificant (adjusted $p = .178$). In addition, the Kruskal-Wallis test revealed a significant difference in teacher-reported scores for aggressive behavior (TRF) based on the third-grade students' number of close friends ($H(1) = 3.840, p = .050$). The significant difference was between students with four or more friends ($Mdn = 3.00$) and students with 2–3 friends ($Mdn = 19.0$).

Summary of social relations and well-being

Research question Q2.3 asked whether students' social relationships are related to their well-being. Since we presumed girls to be more empathic, hypothesis H2.3 assumed that social relations (connections with parents, siblings, peer group, and close friends) would affect students' well-being differently depending on their gender. Hypothesis H2.3 further assumed that students having a good relationship with their siblings would be less aggressive.

The data revealed that girls with good parental relations had significantly lower scores regarding withdrawn-depressed symptoms. In addition, the data for girls indicated that having at least two good friends had a statistically significant influence on somatic complaint scores compared to girls with only one close friend. The data for boys did not reveal similar results regarding withdrawn-depressed symptoms and somatic complaint symptoms. Therefore, the data supports hypothesis H2.3 concerning the connection between students' relations with their parents and withdrawn-depressed symptoms and students' number of close friends and somatic complaint symptoms. The data did not support the assumption of hypothesis H2.3 concerning anxious-depressed symptoms, thought problems, and attention problems, with no significant differences emerging based on gender.

Though the number of close friends had a significant influence on girls' parent-reported scores for somatic complaint (CBCL) symptoms, the results did not

prove true for boys. Therefore, the data supports hypothesis H2.3 regarding students' somatic complaint symptoms and the number of close friends.

The data for boys revealed that boys with more close friends also had lower scores regarding social problems and attention problems compared to boys with fewer close friends. A similar result was found concerning girls' social problems. Thus, the data supports hypothesis H2.3 concerning the association between students' number of close friends and social problems and attention problems.

7.2.4 Connection between free-time activities and well-being

Hypothesis H2.4 claimed that though engaging in weekly sports improves the well-being of students, only emotionally healthy students' well-being is positively associated with structured leisure-time activities. Thus, research question 2.4 inquired into the relationship between students' participation in leisure-time activities and their well-being. The data for this question was collected from students (YSR), parents (CBCL), and teachers (TRF) before the interventions. Students' leisure-time activities are presented in figure 9 based on the whole sample, by gender, and by grade.

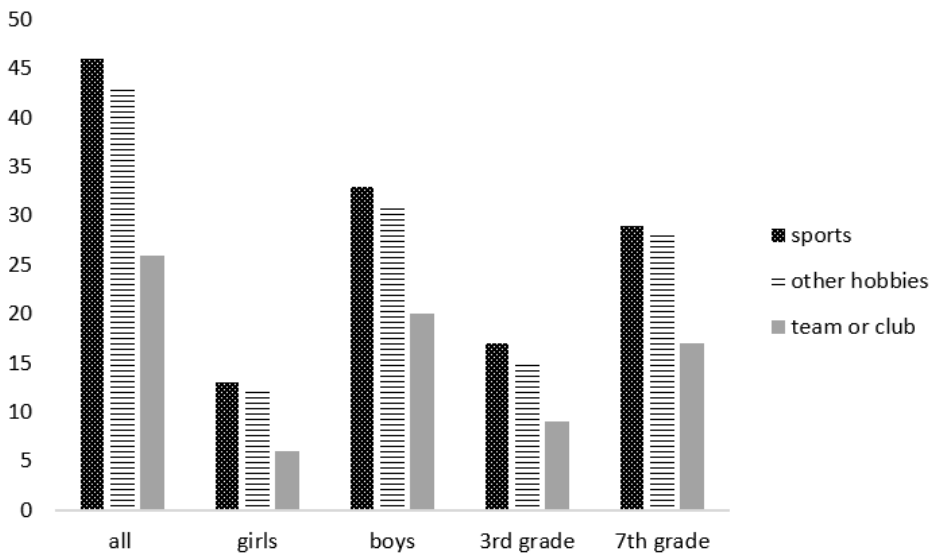


Figure 9

Students' leisure-time activities (sports, other hobbies, and being a member of a sports team or in a sports club)

We analyzed the connection between leisure-time activities and the well-being of students using a Spearman's rho correlation test and an independent-samples Mann-Whitney U test. The tests measured well-being sum variables (internalizing symptoms, thought problems, social problems, attention problems, and

externalizing symptoms) by grouping students according to their leisure-time activities (having sports as a hobby or having other hobbies, and being a member of a team or in a club) and based on their gender and grade.

Sport as a hobby

The analyses needed to account for the fact that 46 (77%) of the 60 students had a sports hobby compared to seven (12%) who did not play a sport as a hobby.

Internalizing symptoms

Based on the whole sample, the Spearman's rho correlation test did not reveal any significant associations between internalizing symptoms and the sport that a student played. Further, the Mann-Whitney test revealed no significant difference in the well-being of students who played a sport and students without sport as a hobby.

When conducting the Spearman test based on students' gender, it revealed a statistically significant negative weak association between boys' parent-reported scores for somatic complaints (CBCL) and participation in sports ($r_s(36) = -.38$, $p < .05$, $r^2 = .14$). The Mann-Whitney test revealed that somatic complaint scores for boys participating in sports ($Mdn = 1.00$) were higher than for those boys not doing so ($Mdn = 0.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{sports}} = 36, N_{\text{no-sports}} = 10) = 27.0$, $z = -2.045$, $p < .05$). But the test did not reveal any statistically significant differences in girls' well-being regarding sports as a hobby.

When assessing students by grade, the Spearman's rho correlation test did not reveal any significant associations between internalizing symptoms and students' participation in sports. In addition, the Mann-Whitney test did not indicate any significant differences in the internalizing symptoms of third-grade or seventh-grade students based on their participation in sports as a hobby.

Thought problems, social problems, and attention problems

When assessing data for the whole sample, for students by gender, or for students by grade, the Spearman's rho correlation test did not reveal any significant associations between thought problems, social problems, and attention problems and students' participation in sports. The Mann-Whitney U test likewise did not reveal any significant differences in thought problems, social problems, or attention problems based on students' participation in sports.

Externalizing symptoms

When assessing the data for the whole sample, for students by gender, or for students by grade, the Spearman's rho correlation test did not reveal any significant associations between externalizing symptoms and students' participation in sports.

Correspondingly, the Mann-Whitney U test did not reveal any significant difference in externalizing symptoms based on students' participation in sports.

Other hobbies

Internalizing symptoms

When assessing data for the whole sample, for students by gender, or for students by grade, the Spearman's rho correlation test did not reveal any significant associations between internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) and students' hobbies. Further, the Mann-Whitney test did not reveal a significant difference in internalizing symptoms between students who participated in hobbies and students without hobbies.

Thought problems, social problems, and attention problems

The Spearman test showed a weak positive association between students' hobbies and parent-reported scores for thought problems (CBCL) ($r_s(39) = .36, p < .05, r^2 = .13$). In addition, the Mann-Whitney test revealed that parent-reported scores on thought problems (CBCL) for students with hobbies ($Mdn = 0.00$) were lower than the scores for those students without hobbies ($Mdn = 1.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{hobbies}} = 38, N_{\text{no-hobbies}} = 3) = 99.0, z = 2.257, p < .05$).

When assessing students by gender, the Spearman test showed a moderate positive association between boys' hobbies and parent-reported scores for thought problems (CBCL) ($r_s(28) = .43, p < .05, r^2 = .18$). Parent-reported scores on thought problem (CBCL) for boys with hobbies ($Mdn = 0.00$) were lower than the scores for boys without hobbies ($Mdn = 1.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{hobbies}} = 28, N_{\text{no-hobbies}} = 2) = 54.0, z = 2.306, p < .05$). The Spearman test showed a moderate positive association between boys' hobbies and parent-reported scores for attention problems (CBCL) ($r_s(28) = .43, p < .05, r^2 = .18$). Parent-reported scores on attention problem (CBCL) for boys with hobbies ($Mdn = 6.00$) were lower than the scores for boys without hobbies ($Mdn = 9.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{hobbies}} = 28, N_{\text{no-hobbies}} = 2) = 56.0, z = 2.339, p < .01$).

The Spearman test showed a moderate positive association between seventh-grade students' hobbies and parent-reported scores for thought problems (CBCL) ($r_s(24) = .46, p < .05, r^2 = .21$). Parent-reported scores on thought problems (CBCL) for seventh-grade students with hobbies ($Mdn = 1.00$) were lower than the scores for seventh-grade students without hobbies ($Mdn = 2.50$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{hobbies}} = 20, N_{\text{no-hobbies}} = 3) = 52.5, z = 2.168, p < .05$).

Externalizing symptoms

The Spearman test showed a moderate positive association between students' hobbies and teacher-reported scores for rule-breaking behavior (TRF) ($r_s(21) = .44$, $p < .05$, $r^2 = .19$). However, the Mann-Whitney test did not reveal any statistically significant differences in teacher-reported scores for rule-breaking behavior (TRF) based on students' hobbies ($p > .05$).

When assessing students by grade, the Spearman test showed a strong positive association between students' hobbies and teacher-reported scores for rule-breaking behavior (TRF) ($r_s(12) = .65$, $p < .05$, $r^2 = .42$). Teacher-reported scores on rule-breaking behavior (TRF) for seventh-grade students with hobbies ($Mdn = 0.50$) were lower than the scores for seventh-grade students without hobbies ($Mdn = 3.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{hobbies}} = 20, N_{\text{no-hobbies}} = 3) = 23.5$, $z = 2.341$, $p < .05$).

Being a member of a sports team or in a sports club

Internalizing symptoms

When assessing data for the whole sample, for students by gender, or for students by grade, the Spearman's rho correlation test did not reveal any significant association between internalizing symptoms (withdrawn-depressed, somatic complaints, and anxious-depressed) and being a member of a sports team or in a sports club. However, the Mann-Whitney test showed a significant difference in parent-reported scores for withdrawn-depressed symptoms (CBCL) between students who played on a team or were in a club and students without this kind of affiliation. Parent-reported scores on withdrawn-depressed symptoms (CBCL) for students on a team or in a club ($Mdn = 2.50$) were lower than the scores for those students without such an affiliation ($Mdn = 3.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 9, N_{\text{no-membership}} = 9) = 294.0$, $z = 2.311$, $p < .05$). Additionally, the Mann-Whitney test showed a significant difference in parent-reported scores for somatic complaints (CBCL) between students on teams or in clubs and students without this kind of affiliation. Parent-reported scores on somatic complaints (CBCL) for students on a team or in a club ($Mdn = 3.00$) were lower than the scores for those students without such an affiliation ($Mdn = 4.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 18, N_{\text{no-membership}} = 23) = 289.0$, $z = 2.214$, $p < .05$).

When assessing students by grade, the Mann-Whitney test showed a significant difference in parent-reported scores for withdrawn-depressed symptom (CBCL) between third-grade students playing on teams or in clubs and students without this kind of affiliation. Parent-reported scores on withdrawn-depressed symptoms (CBCL) for third-grade students on a team or in a club ($Mdn = 1.50$)

were higher than the scores for third-grade students without such an affiliation ($Mdn = 1.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 9, N_{\text{no-membership}} = 9) = 64.5, z = 2.174, p < .05$). In addition, the Mann-Whitney test showed a significant difference in parent-reported scores for somatic complaints (CBCL) between seventh-grade students playing on teams or in clubs and students without this kind of affiliation. Parent-reported scores on somatic complaints (CBCL) for seventh-grade students on a team or in a club ($Mdn = 2.00$) were lower than the scores for seventh-grade students without such an affiliation ($Mdn = 3.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 9, N_{\text{no-membership}} = 14,) = 101.0, z = 2.454, p < .05$).

Thought problems, social problems, and attention problems

When assessing data for the whole sample and for students by gender, the Spearman's rho correlation test did not reveal any significant associations between students' thought problems, social problems, and attention problems and students' participation on teams or in clubs. However, the Mann-Whitney test showed a significant difference in parent-reported scores for social problems (CBCL) between students playing on teams or in clubs and students without this kind of affiliation. Parent-reported scores on social problem (CBCL) for students on a team or in a club ($Mdn = 3.00$) were lower than the scores for those students without such an affiliation ($Mdn = 4.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 18, N_{\text{no-membership}} = 23,) = 302.0, z = 2.679, p < .01$).

When assessing students by gender, the tests revealed a significant difference in boys' parent-reported scores for thought problems (CBCL) between students playing on teams or in clubs and boys without this kind of affiliation. Parent-reported scores on thought problems (CBCL) for boys on a team or in a club ($Mdn = 0.00$) were lower than the scores for boys without such an affiliation ($Mdn = 1.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{\text{membership}} = 12, N_{\text{no-membership}} = 18) = 154.5, z = 2.100, p < .05$).

When assessing students by grade, the Spearman test showed a relatively strong negative association between third-grade students' participation on teams or in clubs and thought problems (YSR) ($r_s(11) = -.56, p < .05, r^2 = .31$). Further, the Spearman test indicated a significant positive, relatively strong association between third-grade students' participation on teams or in clubs and parent-reported scores for attention problems (CBCL) ($r_s(11) = .68, p < .01, r^2 = .46$). In addition, the test revealed a significant positive, relatively strong association between third-grade students' participation on teams or in clubs and teacher-reported scores for attention problems (TRF) ($r_s(5) = .87, p < .05, r^2 = .76$). Despite these associations, the Mann-Whitney test did not reveal any statistically significant differences in

thought problems, social problems, or attention problems based on students' grade level.

Externalizing symptoms

The Spearman test showed a weak positive association between students' participation on teams or in clubs and aggressive behavior (YSR) ($r_s(34) = .35, p < .05, r^2 = .12$).

Parent-reported scores on rule-breaking behavior (CBCL) for students on a team or in a club ($Mdn = 2.00$) were lower than the scores for students without such an affiliation ($Mdn = 2.00$). The Mann-Whitney test indicated that this difference was statistically significant ($U(N_{membership} = 18, N_{no-membership} = 23) = 154.5, z = 2.100, p < .01$).

When assessing students by gender, the Spearman test showed a moderate positive association between boys' participation on teams or in clubs and parent-reported scores for aggressive behavior (CBCL) ($r_s(23) = .40, p < .05, r^2 = .16$). The test also revealed a relatively strong positive association between boys' participation on teams or in clubs and aggressive behavior (YSR) ($r_s(24) = .50, p < .05, r^2 = .25$). In addition, the Spearman test showed a moderate positive association between boys' participation on teams or in clubs and rule-breaking behavior (YSR) ($r_s(24) = .43, p < .05, r^2 = .18$).

When assessing students by grade, the Spearman test showed a moderate positive association between third-grade students' participation on teams or in clubs and parent-reported scores for aggressive behavior (CBCL) ($r_s(14) = .55, p < .05, r^2 = .30$). Further, the test revealed a very strong positive association between third-grade students' participation on teams or in clubs and teacher-reported scores for aggressive behavior (TRF) ($r_s(5) = .87, p < .05, r^2 = .76$). Additionally, the Spearman test showed a moderate positive association between seventh-grade students' participation on teams or in clubs and rule-breaking behavior (YSR) ($r_s(21) = .45, p < .05, r^2 = .20$). However, when assessing students by gender or grade, the Mann-Whitney test did not indicate any statistically significant differences in students' externalizing symptoms based on their participation on teams or in clubs.

Summary of free time activities and well-being

Research question Q2.4 involved students' participation in free-time activities and whether the activities were connected with students' well-being. The findings show that sports have a negative effect on boys' well-being. According to the parents' data, those boys who participated in sports had significantly higher somatic complaint scores than boys who did not participate in sports. The data from parents did not reveal similar results for girls, nor did the results have positive implications with respect to other well-being items or show positive effects for the well-

being of girls who participated in sports. Based on the data, hypothesis H2.4, according to which participation in weekly sports improves well-being, is rejected.

The data also revealed that students' hobbies were related to thought problems. Students in general, and boys and seventh-grade students in particular, who participated in hobbies had significantly lower scores regarding thought problems. In addition, boys with hobbies had lower attention problem scores. Furthermore, those seventh-grade students with hobbies had lower rule-breaking behavior scores. The data also revealed a significant difference in withdrawn-depressed symptom scores, somatic complaint scores, social problem scores, and rule-breaking scores between students participating on teams or in clubs and students who did not do so. The scores were lower for students on a team or in a club. In addition, boys on a team or in a club had lower thought problems scores compared to boys who did not do so. Further, seventh-grade students' somatic complaint scores were lower for those on a team or in a club compared to students without such an affiliation. However, third-grade students on a team or in a club had higher withdrawn-depressed symptom scores than those without such an affiliation.

Hypothesis H2.4 assumed that structured leisure-time activities are connected to well-being only with emotionally healthy students. Thus, the results based on the data primarily support this hypothesis. The hypothesis is rejected, though, for third-grade students participating on teams or in clubs, who had higher withdrawn-depressed symptom scores than those without such an affiliation.

7.3 Intervention outcomes for the well-being of the student

This section focuses on intervention outcomes¹⁰. The main purpose of this study was to examine whether an optional intervention would benefit students in special class education. Thus, the central research aim is addressed first based on the results from the intervention program as well as assessments of students by gender and grade level. Considering that data loss occurred for certain groups and tests, the results are presented to the extent that the data was available. According to an analysis of loss, none of the groups provided data for all tests from all participants. A full dataset for three tests with the ASEBA instrument was available from four students in the EASE 3 group, one student in the ART 3 group, eight students in the ART 7 group, five students in the MATH 7 group, six students in the TAU 3 group, and five students in the TAU 7 group. No data was acquired from the EASE 7 group's delayed post-test. Considering the parallel instruments being used, full datasets were acquired from at least some students in all groups except for the EASE 7 group. Somewhat exceptionally, full datasets on locus of control were also acquired from three students in the EASE 7 group.

¹⁰ Since missing data, especially concerning ASEBA instrument, there were not enough data for comparisons between the experimental and control groups. Kruskal-Wallis results are reported in Appendix 10 (comparison of methods and groups, both).

7.3.1 Connection between intervention and well-being

The main interest of this study was to ascertain, as noted in research question Q3.1, whether an additional intervention benefitted SEN students and their well-being. Hypothesis H3.1 assumed that an additional program could benefit students' well-being by decreasing aggressive behavior and increasing attention as well as social relations with their peer group. The question was answered using an ASEBA instrument as well as several parallel instruments (measuring aggression, empathy, loneliness, and locus of control). A related-samples Wilcoxon signed rank test examined whether any differences could be detected between students' pre-test and post-test scores depending on their participation in an intervention program or being in a control group. The analyses were first performed based on students' participation in the intervention programs or being in the control group, and then based on students' gender and grade level. The pre-test scores were collected before the intervention programs started, and the post-test scores right after completing them.

Internalizing symptoms

According to the results for both intervention program students and control students, the Wilcoxon signed-ranks test did not indicate a significant difference between the median post-test ranks and median pre-test ranks based on students' withdrawn-depressed symptom scores, somatic complaint scores, and anxious-depressed symptom scores. When separating the data by gender, the Wilcoxon test revealed that the post-test withdrawn-depressed symptom scores ($Mdn = 2.00$) of boys in the intervention program ($n = 17$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 18.5$, $z = -2.149$, $p < .05$). In addition, the Wilcoxon test indicated that median post-test somatic complaint scores ($Mdn = 1.00$) of boys in the intervention program ($n = 17$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 12.0$, $z = -2.587$, $p < .010$). When assessing students by grade, however, the Wilcoxon test indicated that the post-test withdrawn-depressed symptom scores ($Mdn = 1.50$) of seventh-grade control students ($n = 6$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 0.00$, $z = -2.060$, $p < .05$).

Thought problems, social problems, and attention problems

The data revealed no significant differences in thought problems and social problems between the pre-test and post-test scores of students in the intervention program and those of the control students. However, the Wilcoxon test indicated that the post-test attention problem scores ($Mdn = 3.00$) of boys in the intervention program ($n = 17$) were significantly lower than the median pre-test scores ($Mdn = 7.00$) ($T = 14.5$, $z = -2.181$, $p < .05$). No other significant differences emerged based on students' thought problems, social problems, and attention problems.

Externalizing symptoms

The Wilcoxon test showed that those boys who participated in one of the three interventions programs ($n = 17$) had significantly lower post-test scores ($Mdn = 4.00$) than the median pre-test scores ($Mdn = 7.00$) concerning aggressive behavior ($T = 13.5, z = -2.462, p < .05$). In addition, it revealed that post-test rule-breaking behavior scores ($Mdn = 2.00$) of boys in the intervention programs ($n = 18$) were significantly lower than the median pre-test scores ($Mdn = 2.50$) ($T = 26.5, z = -2.194, p < .01$). The test did not reveal any other significant differences, though, regarding students' aggressive behavior or rule-breaking behavior.

Aggression

The parallel instrument aggression measure consisted of four items: anger, hostility, physical aggression, and verbal aggression. The Wilcoxon test showed that post-test verbal aggression scores ($Mdn = 12.00$) of third-grade students in the control groups ($n = 9$) were significantly lower than the median pre-test scores ($Mdn = 10.00$) ($T = 42.0, z = 8.389, p < .05$). The test did not reveal any other significant differences between pre-test and post-test scores.

Empathy

The empathy instrument measure consisted of three items: empathic concern, fantasy, and perspective taking. The Wilcoxon test showed that the post-test fantasy scores ($Mdn = 30.00$) of students in the control groups ($n = 14$) were significantly higher than the median pre-test scores ($Mdn = 18.00$) ($T = 75.5, z = 14.243, p < .05$). Further, the test revealed that the post-test fantasy scores ($Mdn = 26.50$) of third-grade students in the control groups ($n = 9$) were significantly higher than the median pre-test scores ($Mdn = 23.00$) ($T = 26.0, z = 5.906, p < .05$). In addition, the post-test perspective taking scores ($Mdn = 27.50$) of students in the control groups ($n = 14$) were significantly higher than the median pre-test scores ($Mdn = 26.00$) ($T = 67.0, z = 2.208, p < .05$).

Locus of control

The locus of control instrument measure consisted of two items: external locus of control and internal locus of control. The Wilcoxon test revealed that the post-test internal locus of control scores ($Mdn = 54.00$) of girls in the intervention programs ($n = 5$) were significantly higher than the median pre-test scores ($Mdn = 49.00$) ($T = 15.0, z = 2.032, p < .05$) (figure 10.). The test did not reveal any other significant differences.

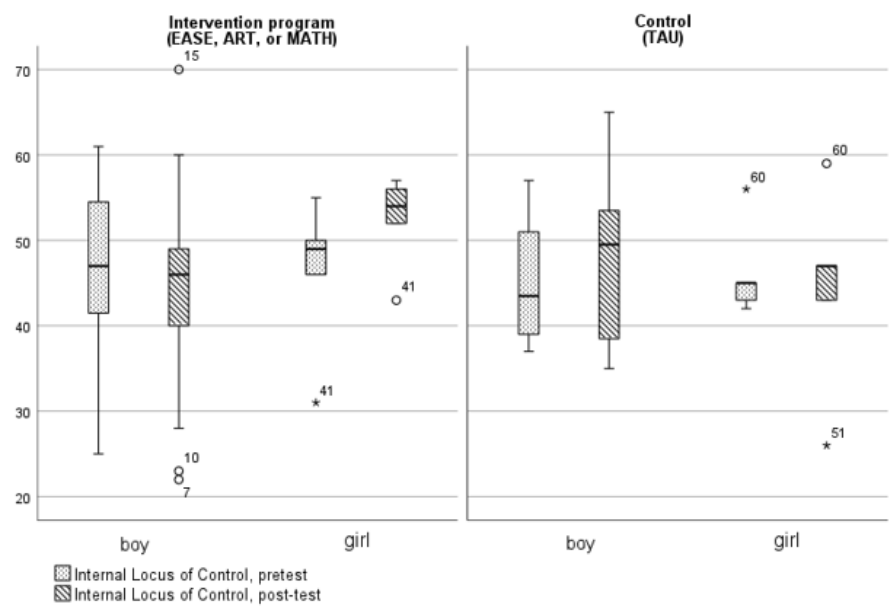


Figure 10.
Students' internal locus of control and external locus of control

Loneliness

Students' sense of loneliness was also measured. The Wilcoxon test did not reveal any significant difference between the pre-test and post-test scores for loneliness, though.

Summary of an additional intervention and well-being scores for students

The data shows that the additional intervention benefitted boys. Boys who participated in the interventions had significantly improved scores regarding withdrawn-depressed symptoms, somatic complaints, attention problems, aggressive behavior, and rule-breaking behavior after participating in the intervention programs. Additionally, girls who participated in the intervention program showed improved internal locus of control scores. Despite the fact that all the intervention programs involved social co-operation activities, students' sense of loneliness did not change between the pre-test and post-test assessments.

However, despite the control groups not receiving any optional intervention program, those students also showed improvement between the pre-test and post-test assessments in three ways. First, the seventh-grade control group showed progress concerning withdrawn-depressed symptoms. Second, the third-grade students in the control group had lower post-test scores concerning verbal aggression.

Third, the fantasy and perspective-taking scores of students in the control group improved in the post-test assessment.

Hypothesis H3.1 assumed that additional interventions would improve students' well-being by reducing their aggressive behavior and attention problems and improving their peer relations. Based on the data, hypothesis H3.1 is supported regarding boys' attention problems and aggressive behavior. But the measures did not reveal any statistically significant improvement in terms of their sense of loneliness, so hypothesis H.3.1. is rejected concerning peer relations.

7.3.2 Connection of the intervention program with well-being

Research question Q3.2 concerned intervention programs and whether the outcomes related to a specific program. Hypothesis H3.2 assumed that an outdoor education program has positive effects and is more effective than programs based on discussion or academic instruction. In addition, it assumed that an equine-assisted program decreases aggression. In this study, EASE program was the only outdoor education intervention, with the assessment method involving equine-assisted activities. Based on hypothesis H3.2, we had assumed that students who participated in the EASE program would exhibit more positive outcomes than students in other programs (ART, MATH) or students in the control groups (TAU).

Besides the ASEBA instrument, students' intervention outcomes were assessed using parallel instruments (measuring aggression, empathy, loneliness, and locus of control). Again, a related-samples Wilcoxon signed rank test indicated any differences between pre-test and post-test scores depending on the intervention program or being in a control group. Thus, we conducted the analyses based on the intervention programs as well as the students' gender and grade level. The pre-test scores were collected before the intervention programs began and the post-test scores right after they had been completed.

Internalizing symptoms

When assessing the data based on the program, no differences in withdrawn-depressed scores emerged between students in any of the intervention programs or the control groups. However, when assessing the students by gender, the Wilcoxon test revealed that the median post-test withdrawn-depressed symptom scores ($Mdn = 0.00$) of boys in the EASE program ($n = 7$) were significantly lower than the median pre-test scores ($Mdn = 4.00$) ($T = 0.00$, $z = -2207$, $p < .05$) (figure 11). Further, the test revealed that the median post-test withdrawn-depressed symptom scores ($Mdn = 1.50$) of seventh-grade students in the TAU program ($n = 6$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 0.00$, $z = -2.060$, $p < .039$).

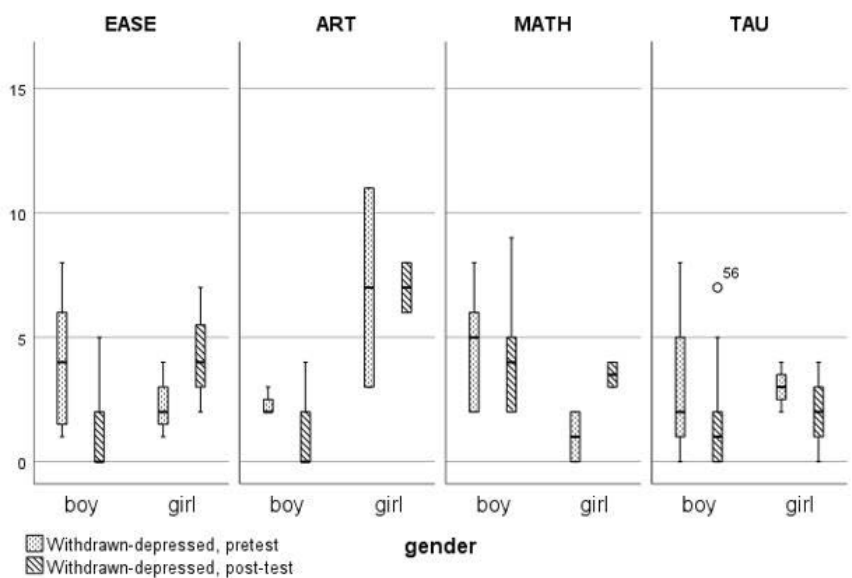


Figure 11. Students' withdrawn-depressed symptoms in pre-test and post-test
EASE (boy $n = 7$, girl $n = 3$), ART (boy $n = 4$, girl $n = 2$), and MATH (boy $n = 6$, girl $n = 2$) or control
TA (boy $n = 10$, girl $n = 3$).

The results for students taking part in the intervention program showed no differences in somatic complaint scores based on the intervention programs or compared to the control groups. However, when assessing the students by gender, the Wilcoxon test indicated that the median post-test somatic complaint scores ($Mdn = 2.00$) of boys participating in the EASE program ($n = 7$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 0.00$, $z = -2.232$, $p < .05$).

When assessing the data based on the intervention program, the Wilcoxon test did not reveal any significant difference between the students' pre-test and post-test anxious-depressed symptom scores.

Thought problems, social problems, and attention problems

When assessing the data from the intervention program, the related-samples Wilcoxon signed-ranks test showed two statistically significant differences concerning students' thought problems. First, the median post-test thought problem scores ($Mdn = 0.00$) for students taking part in the ART program ($n = 6$) were significantly lower than the median pre-test scores ($Mdn = 1.50$) ($T = 0.00$, $z = -2.070$, $p < .05$). Second, the Wilcoxon test indicated that the median post-test thought problem scores ($Mdn = 0.00$) for students in the TAU control groups ($n = 13$) were significantly lower than the median pre-test scores ($Mdn = 2.00$) ($T = 0.00$, $z = -2.214$, $p < .05$).

The median post-test social problems scores ($Mdn = 1.00$) for boys taking part in the EASE program ($n = 7$) were significantly lower than the median pre-test scores ($Mdn = 3.00$) ($T = 2.00, z = -2.047, p < .05$). The revealed no statistically significant differences in the social problem scores of students taking part in the other programs.

In addition, the Wilcoxon test revealed that the median post-test attention problem scores ($Mdn = 4.00$) for students in the EASE program ($n = 10$) were significantly lower than the median pre-test scores ($Mdn = 5.50$) ($T = 4.5, z = -2.144, p < .05$) (figure 12).

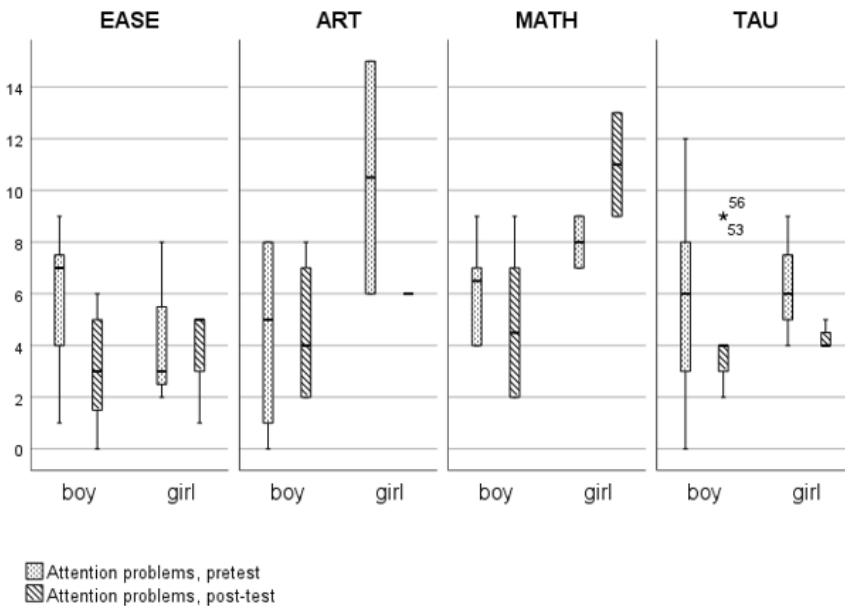


Figure 12.

Students' attention problems in pre-test and post-test

Further, the test revealed that the median post-test attention problem scores ($Mdn = 3.00$) of boys taking part in the EASE program ($n = 7$) were significantly lower than the median pre-test scores ($Mdn = 7.00$) ($T = 0.00, z = -2.207, p < .05$) (see figure 13). Accordingly, the median post-test attention problem scores ($Mdn = 5.00$) of seventh-grade students taking part in the EASE program ($n = 5$) were significantly lower than the median pre-test scores ($Mdn = 7.00$) ($T = 0.00, z = -2.032, p < .05$).

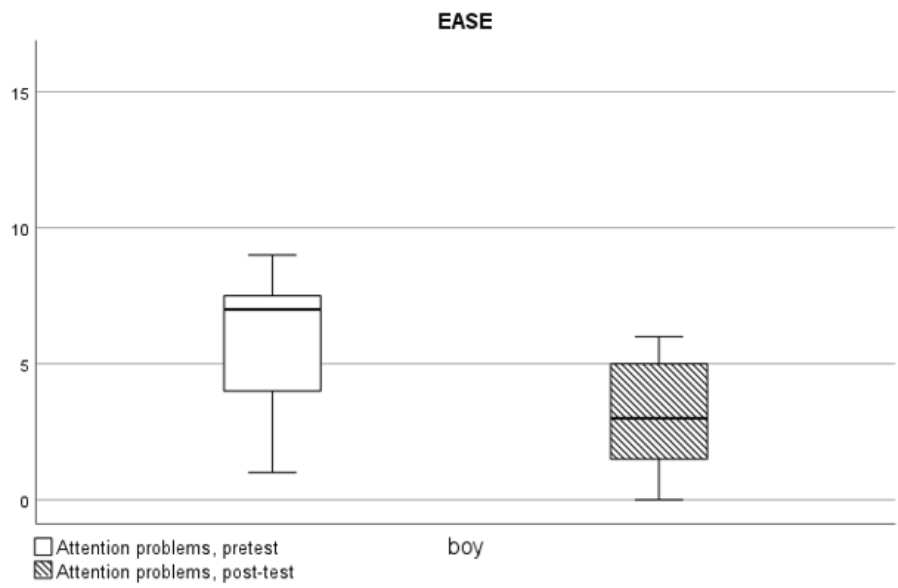


Figure 13. The attention problems scores of boys taking part in the EASE program were statistically significantly lower in the post-test than in the pre-test assessment.

Externalizing symptoms

The Wilcoxon test revealed that the median post-test aggressive behavior scores ($Mdn = 4.00$) of boys taking part in the EASE program ($n = 7$) were significantly lower than the median pre-test scores ($Mdn = 9.00$) ($T = 0.00$, $z = -2.226$, $p < .05$) (figure 14). The test revealed no statistically significant differences in the aggressive behavior scores of students taking part in the other programs.



Figure 14. The aggressive behavior scores for boys taking part in the EASE program ($n = 7$) were statistically significantly lower in the post-test than in the pre-test assessment.

The test revealed that the median post-test rule-breaking behavior scores ($Mdn = 1.00$) of boys taking part in the ART program ($n = 5$) were significantly lower than the median pre-test scores ($Mdn = 5.00$) ($T = 0.00$, $z = -2.032$, $p < .05$) (figure 15).

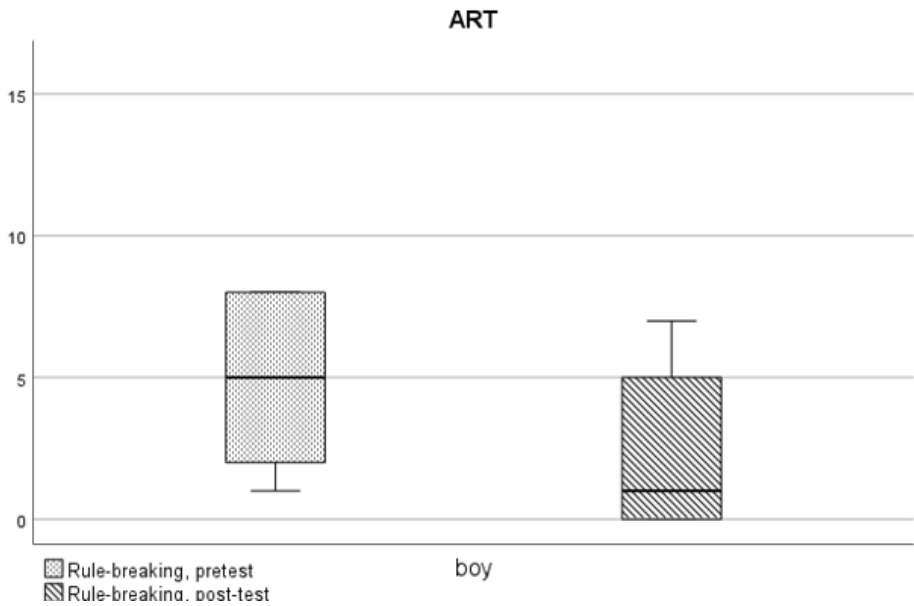


Figure 15. The rule-breaking behavior scores of boys taking part in the ART program were statistically significantly lower in the post-test than in the pre-test assessment.

Aggression

The Wilcoxon test did not show any significant differences in anger, hostility, physical aggression, or verbal aggression scores between the pre-test and post-test assessments based on the intervention program (EASE, ART, and MATH). However, the Wilcoxon test revealed that the median post-test verbal aggression scores ($Mdn = 12.00$) of third-grade students in the TAU control group ($n = 9$) were significantly lower than the median pre-test scores ($Mdn = 10.00$) ($T = 42.0$, $z = 2.324$, $p < .05$).

Empathy

The Wilcoxon test did not reveal any significant differences in empathic concern, fantasy, and perspective taking scores between the pre-test and post-test assessments based on the intervention program (EASE, ART, and MATH) and TAU control groups. However, the test revealed that the median post-test fantasy scores ($Mdn = 22.00$) of students in the TAU control group ($n = 14$) were significantly higher than the median pre-test scores ($Mdn = 20.00$) ($T = 75.5$, $z = 2.106$, $p < .05$). In addition, the Wilcoxon test revealed that the median post-test fantasy scores ($Mdn = 26.50$) of third-grade students in the TAU control group ($n = 8$) were significantly higher than the median pre-test scores ($Mdn = 23.00$) ($T = 26.0$, $z = 2.032$, $p < .05$).

Locus of control

The data regarding internal locus of control revealed no statistically significant differences between the pre-test and post-test assessments of students in any of intervention programs. However, the results of the Wilcoxon test when assessing students by gender showed two statistically significant differences. First, the Wilcoxon test showed that the median post-test internal locus of control scores ($Mdn = 40.00$) of boys taking part in the EASE program ($n = 12$) were significantly lower than the median pre-test scores ($Mdn = 48.50$) ($T = 13.5$, $z = -2.003$, $p < .045$) (figure 16).

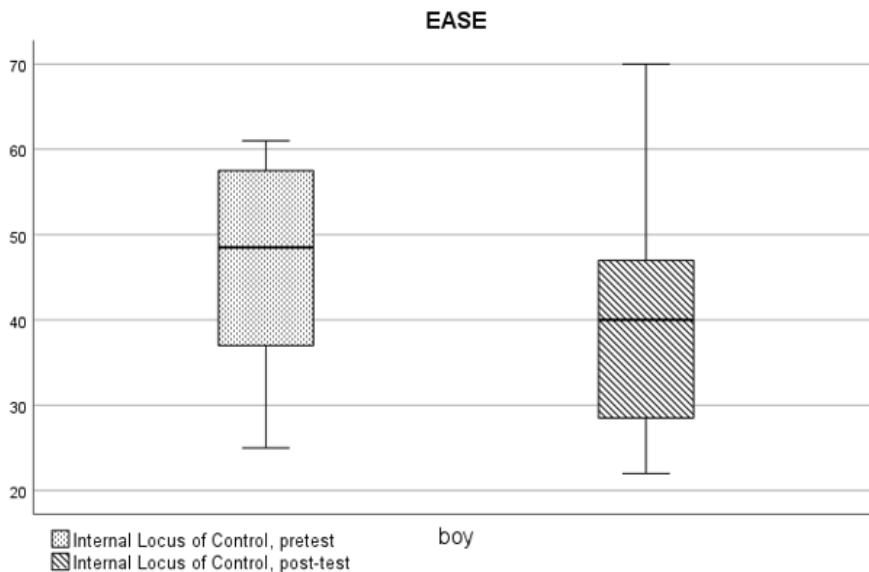


Figure 16. The internal locus of control scores of boys taking part in the EASE program ($n = 12$) were statistically significantly lower in the post-test than in the pre-test assessments.

Second, the test revealed that the median post-test internal locus of control scores ($Mdn = 51.00$) for boys taking part in the MATH program ($n = 6$) were significantly lower than the median pre-test scores ($Mdn = 52.00$) ($T = 0.00$, $z = -2.032$, $p < .05$).

The Wilcoxon test did not indicate any significant differences in external locus of control scores between the pre-test and post-test scores of students taking part in the other programs. Moreover, it did not reveal any significant differences in external locus of control scores based on students' gender or grade level.

Loneliness

The Wilcoxon test did not reveal any statistically significant differences concerning students' loneliness scores based on the intervention program.

Summary of the intervention program and well-being of the students

Hypothesis H3.2 assumed that outdoor education programs have positive outcomes and can be more effective than programs based on discussion or academic instruction. In addition, hypothesis H3.2 assumed that participation in an equine-assisted program would decrease aggression.

The data did not yield any positive results concerning participation in an outdoor education program (in this study, the outdoor education program was the EASE program). The outcomes after interventions are presented in table 27.

Table 27. Comparison of pre-test and post-test assessments of students' well-being. Results are presented based on all students in the intervention program, students' gender, and students' grade level

Variable	EASE					ART					MATH				TAU				
	All	boy	girl	3 rd	7 th	All	boy	girl	3 rd	7 th	All	boy	girl	7 th	All	boy	girl	3 rd	7 th
	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
	17	13	4	9	8	9	7	2	0	9	9	7	2	9	16	11	5	9	7
<i>Internalizing symptoms</i>																			
Withdrawn- depressed		+																	
Somatic complain		+																	
Anxious-depressed																			
Thought problems						+									+				
Social problems		+																	
Attention problems	+	+			+														
<i>Externalizing symptoms</i>																			
Aggressive behavior		+																	
Rule-breaking behavior							+												
(+) well-being improved																			
(-) well-being decreased																			

Attention problem scores were significantly lower after the equine-assisted intervention. This result also proved true for boys participating in the EASE program and seventh-grade students participating in the EASE program. In addition, the data showed that boys' well-being improved as a result of participating in equine-assisted activities. After completing the EASE intervention program, the results revealed five positive outcomes for boys besides reduced attention problem scores. Thus, the data supports hypothesis H3.2 in that an outdoor program provides positive outcomes concerning attention problems. Moreover, the data for boys revealed positive outcomes regarding withdrawn-depressed symptoms, somatic complaints, social problems, and aggressive behavior. However, despite the fact that aggressive behavior (YSR) scores were lower after the EASE intervention when using the main instrument (ASEBA), similar results were not obtained when using the aggression instrument (table 28).

Table 28. Students' well-being using parallel instruments (aggression, empathy, locus of control, and loneliness) after the interventions based on the program, gender, and grade level

	EASE					ART					MATH					TAU				
Variable	All	boy	girl	3rd	7th	All	boy	girl	3rd	7th	All	boy	girl	7th	All	boy	girl	3rd	7th	
Aggression	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	
Anger	15	11	4	9	6	18	14	4	9	9	9	7	2	9	16	11	5	9	7	
Hostility																				
Physical aggression																				
Verbal aggression																			+	
	EASE					ART					MATH					TAU				
Variable	All	boy	girl	3rd	7th	All	boy	girl	3rd	7th	All	boy	girl	7th	All	boy	girl	3rd	7th	
Empathy	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	
Empathic concern	14	11	3	9	5	17	13	4	9	8	9	7	2	9	15	10	5	8	7	
Fantasy																				
Perspective-taking															+				+	
	EASE					ART					MATH					TAU				
Variable	All	boy	girl	3rd	7th	All	boy	girl	3rd	7th	All	boy	girl	7th	All	boy	girl	3rd	7th	
Locus of control	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	
External	13	10	3	8	5	11	10	1	6	5	7	5	2	7	14	9	5	7	7	
Internal																				
	EASE					ART					MATH					TAU				
Variable	All	boy	girl	3rd	7th	All	boy	girl	3rd	7th	All	boy	girl	7th	All	boy	girl	3rd	7th	
Loneliness	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	
	17	13	4	9	8	18	14	4	9	9	9	7	2	9	16	11	5	9	7	

(+) well-being improved

(-) well-being decreased

Further, we rejected hypothesis H3.2 with respect to the internal locus of control, since boys' scores after the EASE intervention were significantly lower than before the intervention. We also rejected hypothesis H3.2 in terms of rule-breaking behavior, though the boys who participated in the ART program had positive outcomes, with lower rule-breaking behavior scores after the intervention.

Moreover, even though the control group students did not receive any additional intervention program, these groups also had positive outcomes regarding four of the well-being items. Therefore, the role and value of additional interventions for special class students will be discussed in more detail in the next chapter.

8 Discussion

This aim of the present study was to discover whether students can learn from horses, meaning that equine-assisted social education (EASE) has a positive influence on the well-being of students when practiced in a school context. According to prior research, equine-assisted programs improve adolescents' persistence in tasks (Hauge et al., 2013) and their social competence and behavior (Pendry et al., 2014) and decrease aggression (Greenwald, 2000). Thus, the overall argument here is that an EASE intervention involving horse-related activities, teamwork, and co-operation will improve the well-being of students. In addition, the study compared the opinions of students, parents, and teachers concerning the students' school success and well-being. Students' school success in mathematics and Finnish was based on the beliefs of students, parents, and teachers regarding SEN students' abilities compared with those of their peer group. Furthermore, the study focused on other factors as well (number of years in special class education, social relations, and free-time activities) that may contribute to students' school success and well-being. It then discussed the role of interventions in special class education. Finally, it assessed whether the EASE intervention influenced the well-being of students compared with the other two interventions, ART and MATH, based on their outcomes.

8.1 Contributory factors to students' school success and well-being in this study

Students' learning is influenced by social interactions with their peer group, relationships with their teachers, and the support they receive from parents (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Several factors support students' motivation to learn and their well-being. Therefore, parents and teachers wish to find suitable programs to motivate students to achieve their goals. If teachers fail to support students' autonomy with certain controlling school practices (rewards for assessments, grades, or other external items), the process of internalization of external motivation is limited as well as realization of intrinsic motivation. Engagement and motivation are supported by circumstances involving experiences of relatedness, competence, and autonomy. These experiences should be enhanced in all of a student's social contexts (Center for Self-Determination Theory, 2022).

Contribution from student

Previous studies show that despite facing obstacles, the school success of SEN students can be predicted by how well they persist in their studies. Further, school achievement is connected with students' social-emotional skills (Guo, Tang,

Marsh, Parker, Basarkod, Sahdra, Ranta, & Salmela-Aro, in press). This study found a positive correlation concerning students' sense of their abilities in mathematics and in Finnish. If a student felt competent in mathematics, then he or she was also confident in own skills in Finnish, and vice versa. Similarly, boys who felt competent in mathematics also felt confident about their skills in Finnish, and vice versa. However, this was not the case with girls and how they experienced their abilities. One reason for such a result could have been the fact that only a few girls participated in this study. According to previous research, students' own attitudes and beliefs concerning their skills and abilities are reflected in their assessment of the subjects in question. Moreover, predictions concerning students' competence in school subjects are related to their academic achievements. Especially girls' opinion of their mathematical competency can have an influence on their later life choices. Girls' choices for future careers could be limited if they feel that their mathematical skills are limited (Vainikainen, Thuneberg, & Hautamäki, 2019).

Contribution from social relations

Co-operation and social skills are related to school belonging as well as with relations with one's peers and teachers (Guo et al., in press.). Parents and teachers have essential but independent roles with respect to students' well-being and motivation. Students' psychological well-being and adaptation as well as their theoretical understanding, successful outcomes, and engagement are all improved through inspiring experiences that enhance motivation. When parents and teachers provide for students' basic psychological needs (relatedness, autonomy, and competence), together with structured actions that support autonomy, students have greater motivation and levels of engagement, resulting in more efficient outcomes (Ryan & Deci, 2017). Though parents have their own role in students' learning process, educational achievements are completed when teaching, contributions from parents, and peer group interactions are all interconnected (Robertson & Symons, 2003). Parental involvement, like how much parents enjoy their children's company and are aware of their daily life, has a positive influence on school achievement and help mitigate learning problems or inappropriate behaviors. In addition, children's greater sense of competence and autonomy as well as their internal motivation and achievement are predicted by the extent to which their parents' show interest and support their autonomy (Ryan & Deci, 2017).

Parents

Like in previous studies (Muntoni & Retelsdorf, 2019; Wentzel, Russell, & Baker, 2016), the results of this study also showed that parents' and teachers' conceptions of students' competence and abilities were related. Parents have a significant influence on students' outcomes. Parental interest anticipates students' school

success (Vainikainen, Thuneberg, & Hautamäki, 2019; Sabel et al., 2011; Flouri, 2006; Jacobs & Harvey, 2005).

In the present study, the results revealed that teachers' opinions regarding students' abilities in mathematics are connected to students' relations with parents. Those students who teachers assessed as having better skills in mathematics did not have as good of relations with their parents compared to students who were not that good in mathematics based on teachers' opinions. This finding also proved true for boys but not for girls. Thus, parents' attitudes and gender-related stereotypes might influence students' beliefs about their competence in specific subjects (Muntoni & Retelsdorf, 2019; Gunderson et al., 2012).

According to a study by Jacobs and Harvey (2005), parents with a higher education also have higher expectations regarding their children's academic outcomes compared to parents with lower education, with the latter choosing rather to emphasize children's character-building and personal-growth aspects. Since many students may find mathematics difficult, they need parents' help. It could be assumed that the time spent together solving with mathematical problems helps students feel supported by parents. This may have brought them closer, leading to a better relationship. The encouragement provided by and expectations set by parents are effective predictors of students' academic outcomes (Hattie, 2008; Jacobs & Harvey 2005). Presumably then, such moments include discussion concerning the actions that students should take in order to be successful. Further, parents that help too much by doing the work for students can hinder the learning process and development of problem-solving skills by students. It can be concluded that students who face more challenges in mathematics also spend more time with parents who help them to the point of doing the task for them. Moreover, such parents also most likely contributed to students' learning problems by helping and coddling them overly much.

Unlike in mathematics, the present study found no evidence that students' relations with their parents influenced Finnish language outcomes. However, the data revealed that the longer third-grade students had been in special class education, the better parents estimated their Finnish skills. It can be concluded that such students received lower results when assessed by class teachers or subject teachers during their time in a mainstream classroom. It is understandable that mainstream teachers might provide lower grades than special class teachers, whose evaluation process could be affected by their daily work with special needs. Thus, parents may forget the former negative assessments when in a mainstream class after students have been in a special class for a longer time. Or, then again perhaps parents may not always be familiar with the goals and criteria for competence in Finnish and do not have a realistic expectation of students' skills in the language. Another explanation is that SEN students do not always have much contact students in a with mainstream (integrated) classroom or are not provided with similar tests and other assignments as those in a mainstream classroom. Also, if the family has no

children in a mainstream classroom, then the parents may not be aware of the demands for exhibiting higher achievement in Finnish. The present study thus did not assess students' real ability in mathematics or Finnish based on school grades or tests, but rather relied on data consisting of the opinions of the students themselves, their parents, and their teachers regarding students' skills in mathematics and Finnish if compared to their peer group.

Individual learning plans may also influence parents' notions of students' school achievement. If the plans are too optimistic and include mostly positive items without reflecting on students' abilities and actions in relation to the curriculum, then parents are not able to adequately follow students' progress. Therefore, beside supporting elements, these educational discussions should comprise criteria-based evaluations of students' competence as a way to best provide students and parents with realistic information about their academic achievements.

Negative attitudes and environmental factors, like parents' expectations (Gunderson et al., 2012) or conditional incentives and rewards provided by parents (Ryan & Deci, 2017; Assor, Roth, & Deci, 2004), may result in students not performing at their best or being successful. Similarly, the present study found that girls' relations with their parents had a positive correlation with girls' opinions of their skills in mathematics. Thus, girls who felt that they are not that good in mathematics did not have such a good relationship with their parents. In contrast, when girls had good relations with parents, they also more positively assessed their mathematical skills.

The present study found that parents' level of concern and support has a positive association with girls' psychological well-being. Girls having good relations with their parents exhibited fewer withdrawn-depressed symptoms. Correspondingly, Armstrong and Boothroyd (2007) argue that the social support that parents provide their children is an important element especially for girls' emotional well-being. In addition, seventh-grade students exhibited fewer withdrawn-depressed symptoms if they had good relations with parents. Furthermore, good relationship with parents also prevented attention problems among students. Thus, the study concludes that parents have an important role in students' well-being.

Teachers

Differences in students' outcomes and academic skills could be due to different teacher practices. Similar student performance could have different grading outcomes, for example if a special class teacher recompenses learning disabilities by assigning additional tasks or if special class students have easier content and tests compared to mainstream students (Hienonen, Hotulainen, & Jahnukainen, 2020). After being special educators for years, and knowing their students' skill sets, it is understandable that the curriculum content and tasks for SEN students are not as demanding as those provided for mainstream students. Thus, the positive

feedback that students and parents receive from a teacher can produce the perception that students' skills in mathematics and Finnish are about average compared to their peer group. Further, students, parents, and teachers meet at least once a year to discuss students' progress, their need for support and how best to assess them. In addition, since this study did not measure students' actual abilities in mathematics and Finnish (for example, by collecting data from tests and what grades students received), their success in mathematics and Finnish was based on opinions.

Since relatedness is a vital factor for internalized regulation (Ryan & Deci, 2017; Deci & Ryan 2002), a teacher's concern for and connection with students are both essential for students learning how to identify and successfully integrate ways to regulate their learning tasks. However, the present study did not collect data concerning students' relations with their teachers. Teachers' ability to notice students' emotional state is important, even though assessing this pedagogical relationship and its influence on students' academic outcomes and well-being were beyond the scope of the present study. Nevertheless, special class teachers' indirect influence can be ascertained via students' opinions of their own skills at and abilities in mastering school subjects. In addition, the way teachers verbally correct students has an influence on their emotional state (Alderman & Green, 2011). Activities, assessment, class spirit, support, and other teacher-related work help regulate how students feel about their competence and skills.

Siblings

Students' achievement and well-being can also be influenced by siblings. When there are sisters and brothers in the family, students must share their parents' attention with siblings. In the present study, students having good relations with their siblings exhibited less anxious-depressed symptoms. Based on previous research, we had assumed that students with brothers and sisters would exhibit less aggressive behavior (Updegraff et al., 2005). However, *only* and *non-only* children were not compared concerning school success and well-being in this study.

Friends

Though findings presented in earlier research (for example, Nelson & DeBacker, 2008) reveal that close friends have an impact on students' motivation and achievement or attitudes (Gonçalves & Lemos, 2013), in the present study the number of students' close friends did not directly relate to their school success. However, the data revealed that boys are more attentive if they have close friends. Despite finding connections between social relations, well-being, and behavior, which could have influenced students' school success and well-being, this result suggests that possessing reasonable social skills and having friends can decrease attention problems. Consequently, the data revealed a connection between social

problems and attention problems and aggressive behavior. However, the connection between social problems and aggressive behavior was not strong.

The data suggests that if students have friends, they might exhibit fewer social problems or withdrawn-depressed symptoms. Thus, the present study found that those students who had many close friends, likewise had significantly lower social problem scores. This finding pertained to both boys and girls. Moreover, students with more friends had fewer somatic complaints. Remarkably, girls had more somatic problems if they had only one friend. It may be that when their only friend does not attend school for one reason or another, then these girls also want to stay at home and skip school. Further, such girls may not experience a sense of belonging, despite the school culture emphasizing relatedness, since, according to Anderman (2002), when the majority of students feel a sense of relatedness at school, then those in the minority may feel rejected and that they do not belong to the school community.

Many preceding studies have indicated that school-based programs promoting social skills benefit students by helping them improve their academic learning skills and manage their emotions better (Ashdown & Bernard, 2012; Durlak et al., 2011). However, the programs have only short-term effects, and they tend to be more effective concerning peer relations compared to social skills as such (Hattie, 2008). To improve students' learning, well-being, and engagement, social skill programs are needed that support students' sense of relatedness within the larger group.

Peer group

The present study found that peer relations do not influence students' school success. Thus, parents and teachers play a more important role than peer group concerning students' academic expectations (Wentzel et al., 2016). However, the overall social environment, which consists of a peer group, does influence students' motivational level (Nelson & DeBacker, 2008), how they value education (Robertson & Symons, 2003), and their behavior (Müller, 2010). In addition, classmates can provide them with emotional support and practice in how to manage their studies and behavior (Hattie, 2008).

The present found that study peer group relations are not associated with students' externalizing symptoms (rule-breaking or aggressive behavior). However, the data showed that thought problems are strongly associated with students' peer relations. Thus, students having good relations with their peers exhibited fewer thought problems, while students with less than adequate relations with their peer group manifested more thought problems. Thompson, Fox, Lapomardo, Hunt, and Wolff (2020) argue that thought problems (data collected with YSR) are also associated with sleeping problems and increase the risk of suicide among youth hospitalized for mental health issues. Thus, they suggested staging interventions that improve sleeping patterns and using YSR as a tool to evaluate mental health

risk factors concerning students' thought problems. In addition, those boys whose relationships with their peer group were below average also exhibited considerably more anxious-depressed symptoms.

Social and personal attributes affect the attitudes of the peer group regarding SEN students. Students who have daily contacts with SEN students as well as girls and older students assume a more welcoming approach towards SEN students (Gonçalves & Lemos, 2014). Moreover, social support from the peer group can play a more important role than parental support for students (Bédard, Bouffard, & Pansu, 2014).

Contribution of special class

Among other things, the National Core Curriculum for the Basic Education (2014) highlights the purpose of special support. It improves students' motivation and self-confidence and provides them with positive experiences concerning success and joy of learning. The main objective of various pedagogical decisions and activities is to confirm a joy for learning.

When assessing students based on their years in special class education, the data did not reveal a statistically significant difference between students', parents', and teachers' opinions of students' skills in mathematics and Finnish.

Instead, the present study found that the longer students had studied in a special class, the more competent they felt in the two subjects. Though the present study only considered opinions and did not assess students' real abilities in school subjects (mathematics and Finnish), the results are in line with previous research findings (Hienonen et al., 2020) that special class students have better grades in mathematics and Finnish and greater mastery-extrinsic orientation compared to their matched pairs in regular classes. Various reasons support the finding, such as the fact that special class students may have received higher grades for their performance when giving extra effort. In addition, students who have spent a longer time in special class education generally receive a better rating in mathematical skills compared to students who have spent less time in a special education classroom. Possibly the longer a teacher had known students, the easier it was for them to plan and implement adequate support. Or, as was mentioned earlier, the longer a teacher had worked in special class education, the wider the gap between assessments of students in a mainstream classroom and those in a special class (see Hienonen et al., 2020).

When examining the influence of special class education on students' outcomes and well-being, the data revealed that seventh-grade girls exhibited fewer anxious-depressed symptoms and attention problems when they had been in a special class for at least four years compared to girls who had been in a special class for 3–4 years. Girls are usually a minority in special classes, so the girls that are placed in special classes tend to have severe learning problems. According to Hienonen et al. (2020), it could be concluded that after struggling in mainstream

classes, they have developed a better mastery-extrinsic orientation after studying in a special class for a longer amount of time. However, the present study only assessed data obtained from nine seventh-grade girls, so more research is required.

Contribution of leisure-time activities

Leisure-time activities had a positive association with students' well-being. The present study found that participating on a team or in a club has a positive influence on students' attention level and thoughts. In addition, such participation made them less withdrawn and depressed, and they had fewer somatic complaints and social problems in the classroom.

According to earlier research (Merglen et al., 2013), only a reasonable amount of sports-related activity (recommended seven hours a week) contributes to well-being. The present study that many students have sports as a hobby (see also Hattie, 2008). Despite sports being an extracurricular activity without any expectations for academic outcomes, they engage students and bring them joy and help develop additional skills (leadership and goal-setting skills, for example). The students in this study primarily participated on teams or in clubs focusing on sports. Thus, it was not surprising that boys' affiliation with sports had a connection with their behavior. The more active the boys, the higher their rule-breaking and aggressive behavior scores.

The data showed that team and club activities have a different influence on well-being depending on the students' grade. Third-grade students participating in team activities were more withdrawn and depressed than those who did not participate in such activities. Since the students were studying in regional special classes, they did not always attend the same school as the other neighborhood children. To some extent, this situation may have prevented students from having friends in the neighborhood and contributed to a sense of exclusion regarding affiliation with a team. It must be remembered that the students also had learning problems or attention problems, and some of them also had behavioral issues. However, third-grade students participating on a team or in a club sport had less thought and attention problems compared to those who did not do so. Most likely those students already possessed adequate attention and social skills to support their participation on a team or in a club, or else their active involvement on teams and in clubs had improved the attention level and thoughts of those students. Teenagers had fewer somatic complaints if they participated on teams or in clubs. This may well have meant that they were strongly engaged with the activity and did not want to be absent from school. Notably, most students who belonged to a sports club or participated on a sports team as a hobby probably were already in good condition and quite fit.

Despite the fact that the present study found that thought problems and attention problems are lower among students with hobbies, only three boys did not have hobbies, so this finding needs to be interpreted with care.

8.2 Intervention as a practice in special class education

Following the principles of SDT theory (Ryan & Deci, 2017; Ryan & Deci, 2000) and earlier research (Reeve, 2002), the purpose of each intervention done for this study was to enhance students' psychological and academic well-being by providing activities that allowed students to make their own decisions as well as to practice teamwork. Reeve (2002) has found, based on research concerning self-determination theory, that autonomously-motivated students are more successful. Therefore, students benefit both developmentally and academically when teachers enhance students' motivation by providing autonomously-supported tasks.

Five special classes took part in short-term interventions as part of this present study. All three intervention programs involved social activities and exercises. The teen-age years, often accompanied by a decline in emotional well-being, are a demanding time in terms of students' psychological growth (Bluth et al., 2017). Since SEN students may have a lower ability to adapt to new situations and challenges, the aim of additional interventions is to provide supplementary support, for example helping students' improve their self-esteem (Ekeland et al., 2005). Despite the programs being important, it is often difficult to conduct high-performance and efficient programs in real life and sustain them over time (Durlak & DuPre, 2008).

The findings of the present study reveal that the interventions were more beneficial for boys than for girls. However, each special class in this study had approximately three times more boys than girls. Compared to the control group, boys who received an additional intervention program showed noticeable improvement, having fewer withdrawn-depressed symptoms, somatic complaints, and attention problems and exhibiting less aggressive behavior and rule-breaking behavior. These outcomes support the results presented in prior studies, which have identified a connection between social-emotional competence and well-being (Taylor et al., 2017; Saggars & Strachan, 2016; Ashdown & Bernard, 2012; Goleman, 2008).

Remarkably, girls who participated in the interventions showed promising improvement concerning internal locus of control. One reason explaining this result was the fact that each intervention session followed a particular and a predictable pattern. Therefore, when students had an idea about the kinds of assignments and exercises included in each session, they were better prepared for them in their minds. This result supports previous locus of control research claiming that the internal locus of control is associated with situational factors. Internal locus of control has positive outcomes with respect to motivation, attitudes, behavior, and well-being, such as influencing an individual's level of commitment, satisfaction, performance, and perceived support (Galvin, Randel, Collins, & Johnson, 2018.) Thus, internal locus of control is relevant for an individual's academic outcomes, social relations, and well-being. Further, it also decreases depression in at-risk children and adolescents (Nowicki, Iles-Caven, Kalechstein, & Golding, 2021).

So, it can be concluded that since girls are a minority in special class education, they may benefit more from an intervention that has specific assignments for each session. In addition, teachers who provide students with care and respect and permit them to construct their own learning experience in the process helped them become more engaged with school (Kelley & Stack, 2000).

Though the control groups were not provided with an additional program, those students also showed improvement. All students in the control groups had higher empathy scores on perspective taking in the post-test. Further, third-grade control students' fantasy scores were higher in the post-test, while their verbal aggression scores also decreased compared to the pre-test assessment. Thus, the results for enhanced empathy and decreased aggression support the findings of earlier studies, since empathy and aggression, or anti-social behavior, have a negative correlation (Savage, Ferguson, & Flores, 2017; Komorosky & O'Neal, 2015; Salmon, 2003). Nevertheless, previous studies have also revealed that school problems are connected with aggressive behavior (Savage et al., 2017). Based on the data, the present study draws the conclusion that teachers who reduce students' level of frustration in the classroom also enhance their social behavior. This may also have an influence on students' improved empathy.

Despite the fact that all the interventions involved team activities, students' loneliness scores did not differ significantly in the post-test assessment. The data revealed a similar result for the control group. Though the results of the present study are promising concerning the benefits of short-term interventions, the data also showed that the control students progressed by engaging with ordinary special class education activities. Perhaps the teachers working with students in the control groups implemented daily practices that enhanced students' ability to predict the content of lessons, their self-confidence in being able to achieve the aims of the lesson, and their social skills, thereby helping reduce their frustration and promote more pro-social behavior and learning.

In summary, the optional programs in this study were beneficial to some extent, since they also included positive, albeit somewhat different, outcomes based on students' group, gender, or age. It should be remembered that SEN students usually have a history of various interventions and failures and frustrations concerning such programs. Thus, students might be more engaged with additional programs if their own special class teacher conducts them with a caring attitude, foregrounds a clear structure, and provides students with the autonomy to choose how to engage with the tasks.

8.3 Equine-assisted intervention in special class education

The aim of equine-assisted social education (EASE) activities in this current study was to improve the well-being of students by providing them with an inclusive environment (horse stables) and inclusive relationships (with horses used to "build

bridges”) between students as well as between students and adults (see figure 1). The field notes confirmed the results presented in earlier studies on the ability of horses to provide atypical activities in an encouraging social environment (Hart, 2000), with EASE interventions providing a stimulating informal learning program.

The EASE intervention in this study benefitted boys more, since their withdrawn-depressed symptoms decreased after equine-assisted the intervention. Other researchers have reported similar results (Frederik et al., 2015; Ewing et al., 2007; Greenwald, 2000). The present study used statistical analysis as well as field notes to support this same result. During the first session of the program, some students chose to watch rather than participate in the activities. They had the autonomy to choose either to take part or be observers. From the second session to the last one, though, every student chose to participate in the tasks. Thus, it can be concluded that they felt safe enough at that point to participate in the EASE program activities. However, students in the control groups (TAU) also exhibited a significant decrease in withdrawn-depressed symptoms. Since both the third-grade and seventh-grade students were in transitional phases of their education, it is likely that some of the students who had started in a new class at the beginning of the school year and during the spring term were more familiar with each other. Therefore, the daily routines could have helped them relate better with the rest of the group. However, the small sample size and low reliability estimates (in pre-test .60 and in post-test .69; see table 12) indicate that the results must be interpreted with care.

Somewhat surprisingly, boys’ somatic complaints decreased after the program. The field notes support this finding since the participation rate for all students was high. Contrary to our initial predictions, equine-assisted activities in combination with co-operational team activities did not improve students’ feelings of loneliness, though the other methods (ART and MATH) and control group (TAU) also yielded the same results.

Even still, the attention problems of students who participated in equine-assisted activities had improved significantly by the end of the intervention program. The improvement had a pronounced effect on the seventh-grade students especially. When the students were participating in the activities, they reminded each other to keep calm and stay focused. According to the field notes written after each session, these students obeyed the rules almost too rigidly concerning horse-related activities. During the first sessions, students were quite tense around the horses. Students’ attention may have improved for several reasons. From the first session at the stables, students expressed an interest in equine behavior and how to communicate with horses. They asked questions and tried to interpret what each horse was “telling” them by its body language. In addition, instead of providing verbal instructions, non-verbal signs were preferred during each session. This meant that students needed to concentrate more and pay attention to body gestures

(see Trotter, 2006). Moreover, since horses are animals that react strongly to their environment, we had discussed safety issues during each session. These issues demanded that students pay attention to their surroundings and that they remain calm and slow in their movements, avoiding any quick and unexpected gestures or actions, so that the horses would not be scared and go into “fight or flight” mode. The adults, though, did not need to remind students that much of these safety rules, since from the first session the seventh-grade students reminded other group members of the rules if they began to act too wildly. Despite the fact that students’ significantly lower attention problem scores after the EASE intervention proved promising, this result needs to be interpreted with care due to the low reliability estimates (in the pre-test .56 and in the post-test .65; see table 12).

If only considering the statistical results, then the EASE intervention did nothing to minimize students’ rule-breaking behavior. However, the field notes reveal that students started to repeat the stable rules and ensure that others followed them. Most likely the behavior that students demonstrated at the stable did not translate to their other surroundings. Unlike the EASE intervention, the Aggression Replacement Training (ART) showed promising result by improving students’ rule-breaking behavior. Seventh-grade students in the ART intervention showed improvement after the program, with lower scores in post-test regarding rule-breaking behavior. Again, this result needs to be interpreted carefully due to the small sample size and low reliability estimates (in the pre-test .69 and in the post-test .66; see table 12).

Similar to previous research (Trotter et al., 2008; Kaiser et al., 2006), our findings show that boys’ aggressive behavior or anger decreases after an intervention. Likewise, boys’ social problems had diminished in the post-test. This finding was confirmed also by the field notes. Since the aim was for all students to help complete these activities, co-operation was crucial to successfully finishing the tasks. In addition, students shared their experiences with parents, as evidenced in discussions during the last session when families visited the stable, and from parents’ feedback:

I have been really glad about this possibility to get to know horses and their stories. It was very important that riding remained as a side issue. There has been time to get to know equine behavior and these horses as they were. It has been impressive to get a big (or a small) animal to trust and obey you from the ground...

X has been excited about equine-assisted activities and proud of his accomplishments with horses. I have been on the side and listened to how he has shared with his friends how to ride and, for example, to make a horse stop. X has told he wants to continue riding...

The results are promising and include appropriate reliability estimates (in the pre-test .83 and in post-test .91; see table 12). Further, the verbal aggression scores of students in the TAU 3 control group improved in the post-test, while at the same time they had higher fantasy scores in the post-test. Thus, the results of the present study concerning third-grade students support the findings presented in previous studies, with improved empathy being connected to lower levels of aggression (Salmon, 2003).

Contrary to our initial predictions, the equine-assisted activities in the present study did not increase students' empathy. This finding confirms earlier research on the topic (Ewing et al., 2007). However, though our study yielded no statistical proof of improved empathy at a general level, the school welfare group noted individual improvements. The group had especially noticed the change in one student whom they had thought lacked empathy. The change in his behavior was witnessed in the last session, when the families were participating and experiencing what students had achieved. Unlike at school, this student behaved with appropriate language and good manners. He also took care of his little sister by helping her to find a suitable riding helmet, helping her mount the horse and walking beside the horse around the track. When students were asked to write about what they remembered most about the equine-assisted program, this student wrote the following:

last day when I saw my sister riding. Nothing else.

Despite the overall focus on ethical content and aim of the ART program to teach social skills, students did not show any general progress concerning empathy after the program, a rather unexpected finding. Moreover, the data did not reveal any difference concerning students' loneliness scores when using a self-rating measure (see Asher et al., 1984) involving students' level of satisfaction with their peer relations before and after the program.

Like in an earlier study (Ewing et al., 2007), our results show that boys' internal locus of control did not improve after the equine-assisted program, though it did decrease between the pre-test and post-test assessments. Both other events occurring in their lives at the time and factors related to the equine-assisted activities could have influenced these results. The horses responded to students' actions even when the students did not recognize that they were influencing the horses' behavior. In such situations, boys may have felt that they did not have adequate control or that the horses were unpredictable. In addition, even though students had plans to perform given tasks with the horses, they often had to change their actions when the horses did not act in the anticipated manner. The Shetland pony especially acted in an unexpected manner; for instance, when the students just finished grooming it, the pony began rolling around on the ground so that it had

to be groomed again, or else sometimes it was faster than the students and broke loose from them. Such unpredictable actions by the horse may have made the boys think that they were not in control of what was going to happen next. A similar statistically significant result was not found with the third-grade students, though. Somewhat surprisingly, boys in the co-operational mathematics (MATH) program also had lower internal locus of control scores after the intervention.

Individual students did benefit from the equine-assisted program, according to their teacher's observations:

*Being around animals and activities calmed and entrusted children [with a sense of responsibility]. They had to pay attention to their own behavior (actions, use of voice) in relation to animals. Own calmness => animal felt safe.
Some had it by nature, but others needed a lot of work to calm down.
Students waited a lot for these Fridays when they were able to leave the school.*

This particular teacher had observed that students waited eagerly for the outdoor education days, when learning took place outside school.

The EASE intervention did seemingly engage students. This information was received from the principal, who could not cancel students' day at the stable even though their special class teacher was on sick leave. He reported that the seventh-grade students were so persistent that he had to replace their own special class teacher with another teacher familiar to them to make the stable visit possible.

The reports from teachers and school administrators highlight that many students were motivated to take part in the program. Some of the students were probably externally motivated. Thus, instead of being motivated by the equine-assisted program as such, they were motivated by being somewhere other than in the school building, not having homework, and being able to engage in activities different than the daily subjects in a classroom. For them, the program was better than an ordinary school day, but they might not have had an interest in it otherwise. However, the field notes also reveal that several students were internally motivated and strongly engaged with the stable activities. They asked if they could continue coming to the stable even after the program had ended. It was those students who pressured the school principal to make the decision to hire a substitute teacher to take them to the stables when their teacher was sick. These internally motivated students were active in all tasks and did not want to leave to go back to school.

Unlike with the EASE program students, it was challenging to create an emotionally warm atmosphere with the ART group, since some of the students required a great deal of support as a result of bad behavior. Therefore, in addition to a special class teacher, this group had two school assistants to monitor students'

behavior. The constant negative attention and requirements might have discouraged students from engaging with the activities. This finding is supported by Skinner and Edge (2002), who noted that an individual's level of engagement in activities depends on what kind of experiences they have had with instructors meeting their basic psychological needs. Such experiences impact students' sense of competence, relatedness, and autonomy and their willingness to participate in activities. Thus, the data shows that since third-grade students did not have their fundamental psychological needs met, their level of engagement was weak.

Instead of struggling with mathematical tasks alone, the MATH program encouraged students to solve problems together. However, it did not lead to any significant improvements in students' well-being. Though the adults guided the decisions about the tasks to be done by groups and in pairs, students had some freedom to express their own ideas. They were given tasks that were to be performed during the lesson. They were given feedback on their progress by me or a school assistant. Their teacher was not actively involved with the students throughout the lessons but was instead working in the next room. With respect to SDT theory (Ryan & Deci, 2017; Ryan & Deci, 2000), we can say that the MATH students' basic psychological needs were only partly met during the program. Even though the students engaged in team-building exercises, their ability to relate to the whole group was not enhanced by this program. Moreover, they could only choose the order in which they completed the tasks. Yet, they were given basic arithmetic assignments adjusted to their abilities to instill a sense of competence and belief in their ability to complete them. Moreover, though girls did not show statistically significant improvement as a result of the program, one of them with an individualized learning plan in mathematics began to feel more competent during the program. After three sessions of the MATH program, both this girl and her mother asked for remedial teaching, since the student felt that she now understood mathematics much better. I advised her to turn to her special class teacher for extra support.

The EASE intervention, much like humane education connecting animals with learning, was expected to increase the positive interactions between teachers and students (O'Connor, 2018). Despite not collecting data concerning students' relations with their teachers and school assistants, the field notes showed that the level of interaction and co-operation was lively when all were helping each other. The stable surroundings served as a positive motivational model (Skinner & Edge, 2002), providing students with a learning environment that supported warm relations and offering them structured frameworks for predictable activities and the autonomy to choose various tasks. Further, the intervention contained all the elements necessary for meeting the basic psychological needs described in SDT theory (Ryan & Deci, 2017; Ryan & Deci, 2000). The tasks were achievable and meaningful for students (providing support for competence). Students were able to choose whether to participate and when to do so (enhancing autonomy), though

ideally the exercises (supporting relatedness) required everyone's participation. The field notes document that these equine-assisted activities enhanced trust and understanding (Berget & Ihlebæk, 2011; Daly & Suggs, 2010), social competence (Pendry & Roeter, 2013), and the ability to master difficult tasks (Hauge et al., 2013).

Despite the small sample size used in the present study, the results concerning the EASE intervention were promising and suggest that equine-assisted activities can be one type of informal learning program to enhance students' well-being. The results of this study support Skinner and Edge's (2002) motivational model (see figure 3). Accordingly, the teacher's role is essential, since the basis for students' engagement is established by warm social surroundings and structured, predictable, and achievable activities (Skinner & Edge, 2002), which improve students' sense of independence and autonomy (Skinner and Edge, 2002; Assor et al., 2002).

8.4 Limitations

Like other studies, the current study does have its limitations. As Mills et al. (2010) have noted concerning case studies, case study approaches provide an opportunity to acknowledge and focus on those matters of importance that emerged from the data.

It is challenging to make generalizations based on case study results, even though former research does support the findings and precise means of analysis. Therefore, since the current study discusses results only from one municipality, it could be concluded that the results could best be applied to this municipality (see Mills et al., 2010). Yet, the conclusions could be interesting for other schools facing similar issues with students or questions about curricular design. Further, the case studies are important because the aim is to develop effective programs and practices to meet students' needs, for instance by providing an inclusive education for SEN students with their age-appropriate peer group. Students' special needs are not similar, but each student still needs suitable programs. Thus, the case study approach can provide information that meets students' needs in various surroundings, like in inclusive settings.

Greene and Hill (2005) write about universal instruments being used in psychological research. They note that although Achenbach's ASEBA instrument is recognized worldwide as yielding high factorial invariance despite varying cultural contexts, it may still comprise psychological concepts from the original culture that invalidate the findings. Achenbach's Youth Self Report (1991) was quite difficult for SEN students to complete. It is not just lengthy but also looks complicated. The group that was supposed to be participating in the MATH 3 group program gave up right after the teacher presented the instrument. The complicated structure of the instrument resulted in a systematic loss of data.

In addition, the small non-randomized sample size presented limitations, narrowing our ability to make generalizations based on the results. Although the five schools chosen for this study were ordinary schools within the municipality, they were not randomized, as they were chosen by their location, with good access to public transportation. This created a potential bias in the results, as three intervention groups (EASE 3, EASE 7, and ART 7) had students from the same school. The absence of randomization must be considered when interpreting the results, even though all the participants were students meeting the criteria for regional special education groups.

Small studies like the present study thus have many limitations. The main concern is how to interpret the results properly, since if the effect size is small, then the sample size should be large enough to estimate the real effect of the interventions. A small sample size can also yield results that over-estimate certain cause-and-effect observations, a situation that does not occur so much with a larger sample size. Therefore, studies with a small sample size can only make suggestions about an effect, while larger studies generate more exact results (Hackshaw, 2008). However, when the sample size consists of 15–100 participants, then it is possible to implement an experimental study and analyze variables that are strongly biologically determined (Nummenmaa, 2009). Considering these facts, the results of the present study provide basic propositions for further studies with a larger sample size to determine more precisely whether the results can be generalized, since the sample size concerning the EASE intervention was lower than the recommended sample size.

Whereas missing data is both annoying and causes difficulties in statistical analyses, it is typical and hard to avoid in intervention studies (Rioux & Little, 2021). The current study encountered an unexpected loss of data despite the precise instructions shared with teachers. The main purpose of the study was to gather data from students, parents, and teachers based on three measures (pre-test, post-test, and delayed post-test) to examine whether the interventions had an influence on students' well-being. We failed to acquire such data, though, as systematic data loss occurred concerning certain groups of students, parents, and teachers, especially in the post-test and delayed post-test assessments. This resulted in data from parents and teachers concerning the post-test and delayed post-test assessments being excluded from the analysis. This led to the loss of important information (see Nummenmaa, 2009) regarding intervention outcomes, since adults' observations were not available for analysis. Similarly, as several groups lacked delayed post-tests, these results could not be reliably reported.

The multifaceted role of the researcher had to be considered regarding the research questions (what was the focus of the study), design, implementation, and results, all of which could be screened through personal insights and persuasion. Thus, the quantitative research design was chosen to confirm more objective interpretations. In addition, despite the focus being on the equine-assisted

intervention, the outcomes were compared with the two other interventions and the control groups.

Despite these limitations, the study is a strong evidence-informed study that provides good ideas on how best to implement curricula with transversal competencies in outdoor education settings and thereby enhance informal learning. Moreover, even as a conservative estimate, the results endorse the need to include equine-assisted social education as an additional program to support the well-being of students.

Validity

When the instruments successfully measure the phenomenon that is supposed to be assessed, then the research is considered valid (Muijs, 2016; Drost, 2011). Multiple instruments are needed in social and educational research to adequately quantify human behavior. The tests that proved valid for the purposes of this study were also reliable, but not vice versa (Drost, 2011). However, educational studies involve certain issues regarding validity. Concepts, like thoughts and attitudes, that cannot be measured directly are considered latent variables. For that reason, there was a need to incorporate instruments that would determine these variables indirectly (Muijs, 2016). Creswell (2003) has described the potential threats that influence internal and external validity, statistical conclusion validity, and construct validity in quantitative research. Participants' experiences and the intervention procedures may influence a researcher's ability to derive appropriate conclusions from the data collected based on the treatment. Insufficient practices during the process (such as changing the instrument), and difficulties in implementing intervention, posed threats to the internal validity of the findings. External validity involved making inferences based on the sample data and applying them to other settings, situations, and populations. If the conclusions are incorrect, this then compromises the external validity of the study. In addition, if incorrect deductions are made based on the statistical weakness of the results, then the statistical conclusion validity is threatened. Moreover, using appropriate definitions and instruments with variables may compromise the construct validity of the study (Creswell, 2003).

Certain issues needed to be considered when discussing validity in this study. To improve internal validity, the researcher implemented all interventions herself. With this procedure, she could draw a deeper picture of each group (for example, students' and teachers' interactions with and behavior towards each other). This information increased understanding of the statistical findings. Further, parallel instruments were completed together with the main instruments, and the interventions had manuscripts that were documented. Regarding external validity, the small number of participants, lack of data, and "the convenient sample" chosen based on the location of the schools all needed to be considered. To enforce external validity, parents' and teachers' data were left out of the post-test and

delayed post-test assessments. Additionally, concerning the statistical conclusion validity with respect to this multiple case study, it was appropriate to make generalizations based on the results. Instead, the results provide examples for practice in a school context and ideas for future research. In addition, the construct validity does meet the requirements for a standardized main instrument with precise definitions for variables.

Reliability

Reliability can be increased by using longer tests with multiple items (Drost, 2011). Therefore, the present study used ASEBA instruments (CBCL, TRF, and YSR) with eight sum variables measuring students' well-being. Each sum variable consisted of at least seven statements. However, the longer the test, the more SEN students may have not answered statements as well as they would have with a shorter test. To increase the reliability of the study results, we used four parallel instruments that were easier to complete.

The present study did not measure students' school success, but instead relied on information based on students', parents', and teachers' conceptions of students' skills in mathematics and Finnish. The more they all shared similar opinions concerning students' levels of achievement and competency in these two subjects, the greater the reliability of the results. Since statistical analysis (Spearman's rho correlation test and a related-samples Wilcoxon signed-ranks test) did not indicate any significant differences between students', parents', and teachers' opinions concerning students' skills in these two school subjects, it can be concluded that they shared similar views about students' skills. However, it should be mentioned that the SEN students were all studying in a special class and being taught by special class teachers, with the assessments of students in special class education not necessarily equating with the assessments of students in a mainstream classroom, and thus students' real competency in these subjects was not measured.

9 Conclusion

What teachers do matters

Hattie (2008)

This was a pilot study conducted in Finland and designed to examine an equine-assisted program and its impact on students' well-being. Besides horse-related activities, the study involved two other interventions to assess the wellbeing of students. Despite some positive outcomes in the post-test assessment, we did not collect longitudinal results as part of this study. Thus, reliability of the results over time is not known. Yet, short-term interventions may be beneficial because of the low cost in funding them and because they can be done within a reasonable amount of time and meet students' needs.

Special education should involve a “from-research-to-practice” strategy to help students develop in their current situation or enhance their achievements, since research also provides information regarding the success of new programs and procedures. However, if teachers are not able to provide new findings, then new practices cannot be implemented. Thus, educators should be “awake” to their surroundings and continuously search for best practices (Torres et al., 2012). In addition, since the classroom climate can be improved with social support and care, the teacher's role is significant in engaging students and having an impact on the outcomes (Donnelly & Lambourne, 2011) and students' motivation (Ryan & Deci, 2017; Skinner & Edge, 2002). Further, Cook and Odom (2013) suggest that research results should be “translated” into daily classroom practices. Moreover, research results and the implementation of new programs are traditionally published in academic journals. Instead of just targeting an academic audience, these research-informed practices need more publicity (Brock & Carter, 2015; Cook et al., 2008) so that they can be adopted and applied by educators. Thus, this chapter summarizes the key findings of this study. Key arguments for teacher practices that best enhance students' well-being are presented as well as recommendations for future research.

9.1 Integrating these interventions into the 2014 Finnish school reform

The structures and practices of a learning community promote well-being and safety, thus creating preconditions for learning (FNAE, 2016).

At the beginning, the purpose of this study was to compare three short-term interventions and their association with students' well-being. During the years spent

working on this study, the data revealed thematically identical issues addressed in the interventions and the Finnish school reform.¹¹ As the National Core Curriculum for Basic Education (2014) emphasizes, every student is unique and valuable has the right to achieve his or her maximum potential. In addition, the primary goals are to enhance students' participation, increase the meaning of studying, and give every student the possibility to achieve success. Therefore, all three interventions had elements designed to support students' motivation and well-being based on SDT theory (Ryan & Deci, 2000, 2017). All three interventions provided support for students' basic psychological needs by encouraging their sense of relatedness through functional activities and working together, providing students with a sense of autonomy to freely choose tasks and a sense of competence by engaging in diverse activities.

Accordingly, students need adults who encourage them and provide them with individual support, and who above all listen to them and care for the students' well-being. The practices that schools use to engage and motivate students in learning and meeting their needs are essential to students' academic achievement and well-being (Ryan & Deci, 2017; Tuominen-Soini, Salmela-Aro, & Niemi-virta, 2015; Niemiec & Ryan, 2009). However, when special class teachers offer students this kind of care, the teachers' view of "what is normal" may change the longer they have worked in special education. This could mean that they estimate students' academic performance as being better than it actually is when compared to the requirements set for mainstream students.

Equally important for students is factual involvement, participating in the school community and working together with others¹² on meaningful activities that enhance well-being (FNAE, 2014). School provides an important environment for the development and growth for young people. To engage students and motivate them in learning, students' academic achievement and well-being are influenced by the activities implemented at school to meet their needs (Ryan & Deci, 2017; Tuominen-Soini et al., 2015). Instead of comparing students with each other, they should be encouraged and provided with multiple ways to show competence and what they have achieved and learned. The role of teachers is to guide students in recognizing their strengths as well as what students need to practice more (FNAE, 2016).

¹¹ "The school community interacts in a respectful and constructive manner. It offers opportunities for individual and shared learning for all its members. All members take each other into account through a dialogic interaction, striving to adapt their own actions to the activities of the community. This dialogue requires that everyone participates, listens to, and hears the thoughts and needs of the others. Even if learning takes place more and more outside the school, the versatile and safe learning environment offered by the school provide a strong support for the growth of the pupil" (FNBE, 2016).

¹² The students' experiences, feelings, areas of interest, and interactions with others lay the foundation for learning (FNAE 2014).

By providing alternative ways for learning, informal learning practices, and programs that support autonomy, relatedness and competence, the interventions embodied the ethos of the new curricula. The equine-assisted social education especially, which was performed at a stable, outside of the school building, fit the definition of an extracurricular practice. The program currently adheres to the demands of the National Core Curriculum for Basic Education by engaging students in co-operation, interaction and supporting their personal growth. Furthermore, the national core curriculum designates key transversal competencies that students will need throughout their lives, each of which derives from them having acquired a basic knowledge of facts, skills, values, and a desire to learn (FNAE, 2016). The EASE intervention as a form of informal outdoor education comprises such competences as critical thinking, interaction, expressing oneself, taking care of oneself and one's daily life routines, participation, involvement, and aiming for a sustainable future. Moreover, multidisciplinary learning modules with multiple subjects can be easily organized at a stable and its surroundings.

9.2 Lessons learned from horses for school practice

This study, though an academic research project, does make some suggestions regarding daily practices. Social skills relate to school success (Guo et al., in press). Moreover, Finnish students need to improve such skills. Thus, early support is critical especially for students who are at risk. Further, students with concentration or attention problems or who engage in disruptive behavior are at increased risk of being rejected by their peer group. Therefore, bonding with the school and its aims, feeling a sense of connectedness with it and the students, and having good relationships with teachers are appropriate ways to promote engagement and coping (Skinner & Edge, 2002) and mitigate the tendency for student violence (Savage et al., 2017).

Though Finnish teachers are highly educated, the present study emphasizes areas for improvement. The Finnish national curriculum highlights students' active involvement, the importance of instilling a sense of meaningfulness and a joy of learning, and that positive interactions should be encouraged, all of which are easier to implement when teachers and other school adults collaborate with one another. Moreover, in addition to promoting students' well-being and learning, such strategies also benefit teachers. Prior research shows that teachers find co-teaching quite beneficial (promoting their well-being and professional development) and that students receive more personal time (Takala & Uusitalo-Malmivaara, 2012).

However, prior studies (Taylor et al., 2017) have also found that interventions cannot be implemented with a "one-size-fits-all" principle, since they are not always suitable for every student. Moreover, interventions should be carried out in a culturally responsible manner.

Teachers, pedagogical relationships, and students' engagement

Special classes have usually no more than ten students, but it is not a given that the students know each other or their teacher or that the teacher really knows the students. Nevertheless, teachers can support students' improvement by providing them with a sense of relatedness, a chance to be autonomy-supportive, and tasks that enhance their sense of competence (Reeve, 2002). As effective educators build inclusive learning environments and bonds with students (see figure 1), incorporating informal learning practices that differ from formal teaching and learning would help teachers build these social contacts in the classroom.

According to the National Core Curriculum for Basic Education, the core objective of the curriculum is to promote greater interaction between teachers and students by supporting students' active and joyful engagement with meaningful tasks (FNAE, 2016). Based on experiences and field notes related to equine-assisted social education, this intervention provided a learning environment that successfully met this curricular demand. The EASE intervention improved interactions between students and pedagogical relationships between students and their teacher. Moreover, teachers were able to provide additional activities to develop students' self-esteem and sense of being a learner, thereby supporting new opportunities for growth. Thus, equine-assisted social education is an approach that could strengthen such pedagogical relationships since its frame of reference is social pedagogy. Therefore, the present study encourages teachers to adapt practices that support students' motivational dynamics and engagement with learning (Skinner et al., 2008; Skinner & Edge, 2002; Wallace & Sung, 2017) by encouraging teachers to know the students and their personal goals, interests, and values (see figure 3). These practices could be then connected to educational concepts.

Adolescents are more passive in establishing new relationships, observing the environment around them, or engaging in physical activities (Guo et al., in press). Therefore, equine-assisted social education provides one type of program designed to motivate and encourage middle school students. When teachers participate as equal partners with students in equine-activities, they serve as role models for appropriate pro-social behavior. This inclusive practice nurtures relatedness and supportive and inspiring relationships and promotes students' intrinsic motivation (Skinner & Edge, 2002; Jennings & Greenberg, 2009). The stable surroundings, where people groom and take care of horses, provided a comfortable setting for students to have discussions, even about quite personal topics. Various kinds of nature-based school trips could provide similar connections.

The quality of the teacher-student relationship plays an important role in students' success (Skinner & Edge, 2002). In addition, teachers who have SEN students, should pay attention to those variables that improve the teacher-student relationship (Alderman & Green, 2011; Skinner & Edge, 2002). An encouraging and caring teacher has a considerable impact on a healthy classroom climate,

students' engagement with school, and students' academic achievements (Ryan & Deci, 2017; Hattie, 2008; Skinner & Edge, 2002), as well as on social-emotional outcomes (Jennings & Greenberg, 2009; Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008).

The pedagogical relationship is encouraged when teachers understand the unique circumstances of each student by using both head and heart (Rothuizen & Harbo, 2017), thereby identifying students' abilities and competencies. A sense of competence is an essential part of well-being (Ryan & Deci, 2017; Deci & Ryan, 2002; Harter, 2015; Rothuizen & Junker Harbo, 2017; Rutter, 1987); it occurs when students feel they can perform meaningful and necessary tasks and that their perspectives are valued (Rothuizen & Junker Harbo, 2017). When teachers provide students with these basic needs, they also provide them with the tools for intrinsic motivation and well-being.

Recommendations for future research

As the first dissertation to combine equine-assisted social education and special education, this study provides an opening for Finnish educational research on this topic. Though the study compared outcomes from three different interventions, the focus was on equine-assisted social education. Earlier studies on equine programs often lack significant statistical results, or else the results are not convincing. Given the fact that equine-assisted activities benefit and improve the skills of both clients and practitioners, more information on their precise effects is still required. In addition, more multidisciplinary studies on the physical, cognitive, psychological, and social outcomes of equine-assisted programs are needed.

Since the data revealed statistically significant outcomes after the equine-assisted interventions, further studies are needed to duplicate the results in similar settings with larger randomized samples, for example to determine the psychological mechanisms underlying the calming effects that help decrease students' attention problems after participating in an equine-assisted program. Further, a mixed methods design with quantitative instruments and video recordings could provide valuable information.

One of the main points of interest for further studies would involve closer study of teachers' classroom practices and their pedagogical relationship with students. This approach begs two important questions. First, if teachers were provided systematic support for meeting their basic psychological needs (relatedness, competence, and autonomy), would this have an impact on students' outcomes? Second, could equine-assisted activities influence how teachers build pedagogical relationships and trust with their students? To answer these questions, teachers should be provided with similar equine-assisted activities as in the present study.

Perhaps in the future the use of "equine facilitators" will spread throughout the country as behavior and learning moderators help SEN students achieve their goals. This requires adequate evidence and proof of their effectiveness before the

state and local governments would allocate more public funding and resources for equine-assisted programs. Therefore, it is essential to develop equine-assisted social education programs with a pedantic implementation and documentation as well as conduct experiments with different populations of students. With more significant outcomes, this kind of program could attain broader public recognition for promoting positive life skills among students.

Accordingly, carefully designed, implemented, and documented studies will help researchers and teachers develop, perform, and compare equine-assisted interventions in the future. Certain principles should lead to future research. First, programs should be planned for the longer duration (so far, most have been implemented for only a short time). Second, targeted equine programs focusing on specific groups (dropouts, teachers, parents, school community) also need attention. Third, data collectors who are unaware of the predicted outcomes (benefits of the horse) should be used to achieve more detailed, bias-free results. Fourth, research should be implemented in several riding centers with a standardized intervention measurement.

Equine-assisted activities and students' engagement

According to earlier studies, equine-assisted interventions benefit SEN students by improving their trust (Bachi et al., 2011; Vidrine et al., 2002) and self-image (Ewing et al., 2007), offering them psycho-social benefits like improved social competence, empathy, self-esteem, autonomy (Burgon, 2011), and behavior (Trotter et al., 2008) and providing them with a sense of hope and decreased levels of depression (Frederik et al., 2015).

Following the motivational model of context, self, action, and outcomes (see figure 3), unengaged students could benefit from an equine-assisted program when activities are done at a stable in a way that creates a structured learning environment. Participants can choose what kinds of tasks they want to perform. Horses are co-educators, helping students' focus on their own behavior and its influence on the environment (mainly how horses respond to it). Moreover, they can experience this type of environment, which exists "outside the usual treatment setting," with more pleasure and an increased joy of learning (Kendall, Maujean, Pepping, & Wright, 2014). Furthermore, students' motivation and understanding can increase by being responsible for animals (Melson, 2001).

Sometimes families have difficulties in trusting the school and are passive concerning school activities (like "open doors" and parents' evenings) if they are only presented with stories of their students' failures at school. This means that especially students with special needs can have parents who do not participate in school life. In the present study, the horse stable also provided an inclusive environment for families at the end of the EASE intervention. Families were invited to experience students' progress in engaging with equine-assisted activities. Almost all parents participated. The students made their own decisions about what

they wanted to present to this audience. One by one students showed what they had learned. Right after the first student's performance with a horse, parents started to applaud. One of the mothers told me that this was the first time her son had received positive public recognition. This made her proud. The family evening at the stable involved elements of SDT theory to support students' basic psychological needs (Ryan & Deci, 2000, 2017). Students freely chose their activities (autonomy) and demonstrated them (competence) for the audience, which consisted of their families and classmates (relatedness). Though students had been told beforehand that demonstrating equine-related skills was voluntary, all the students wanted to be "on the stage." It can be concluded that enforcing these fundamental needs throughout the intervention and enhancing students' relationships through a focus on human-equine bonds accounts for somewhat for this positive outcome. These kinds of opportunities should be developed for all students and families.

There are beginnings and endings. The present study introduced equine-assisted social education in a school context and assessed its connection with students' well-being. However, future studies are needed to develop these kinds of informal learning activities. What equine-assisted activities in stable surroundings best support students' basic psychological needs by providing them with a sense of relatedness, competence, and autonomy? This demands more field work and research.

Thus, unanswered questions and unsolved problems remain in the field of equine-assisted learning. Perhaps seeing the Mother's Love statue will convince researchers to follow this hoof path. As a Ph.D. candidate engaged in such a lengthy learning process and the unexpected challenges of working with SEN students, this project has been a deeply personal journey for me. In the beginning, I had the idea that horses could teach students to feel a sense of connection, like how to "act as a member of the herd." Further, it was obvious that the students were not the only learners along the way. Students' learning and well-being can be improved by creating safe environments and being around horses can teach them about how to build trust and about the meaning of listening and connecting. Therefore, educators who want to support SEN students by forming close and respectful pedagogical relationships with them should learn lessons from horses.

*"If you now opened your eyes,
carefully looking under the trees,
sharing the same view with me*

*the desirable mare being still there, tenderly nurturing the foal
bent toward her,
making her feel safe."*

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Appendices

Appendix 1. Abbreviations

AAA	animal assisted activities
AAT	animal assisted therapy
ART	Aggression Replacement Training intervention in this study
ASEBA	Achenbach System of Empirically Based Assessment
BSP	behaviour specific praise
CBCL	Child Behavior Checklist
EAA	equine assisted activities
EASE	equine-assisted social education intervention in this study
EFP	equine facilitated psychotherapy
MATH	co-operational mathematics intervention in this study
RtI	response-to-intervention
SEN	special education needs
TRF	Teacher's Report Form
YSR	Youth Self-Report

Appendix 2. Descriptives of dependent variables

School success

Variable	<i>N</i>	<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
success in mathematics						
CBCL	41	2.73	3.00	0.807	1	4
TRF	21	2.43	2.00	0.978	1	4
YSR	46	2.98	3.00	0.906	1	4
success in Finnish						
CBCL	41	2.51	3.00	0.637	1	4
TRF	16	2.44	2.50	0.814	1	4
YSR	46	2.67	3.00	0.871	1	4

CBCL = Child Behavior Check List (parents), TRF = Teacher Report Form, YSR = Youth Self Report

School success	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	Valid	Missing					
EASE 3							
mathematics CBCL	4	5	3.50	4.00	1.000	2	4
mathematics TRF	0	9					
mathematics YSR	5	4	3.00	4.00	1.414	1	4
Finnish CBCL	4	5	2.50	2.00	1.000	2	4
Finnish TRF	0	9					
Finnish YSR	5	4	2.20	3.00	1.095	1	3
EASE 7							
mathematics CBCL	5	3	2.60	3.00	0.548	2	3
mathematics TRF	0	8					
mathematics YSR	7	1	2.86	3.00	0.690	2	4
Finnish CBCL	5	3	2.20	2.00	0.837	1	3
Finnish TRF	0	8					
Finnish YSR	7	1	2.29	2.00	0.756	1	3
ART 3							
mathematics CBCL	5	4	3.20	3.00	0.447	3	4
mathematics TRF	0	9					
mathematics YSR	1	8	3.00	3.00		3	3
Finnish CBCL	5	4	2.40	2.00	0.548	2	3
Finnish TRF	0	9					
Finnish YSR	1	8	3.00	3.00		3	3
ART 7							
mathematics CBCL	4	5	2.75	3.00	0.500	2	3
mathematics TRF	0	9					
mathematics YSR	9	0	3.22	3.00	0.833	2	4
Finnish CBCL	4	5	2.75	3.00	0.500	2	3
Finnish TRF	0	9					
Finnish YSR	9	0	3.00	3.00	0.707	2	4
MATH 7							
mathematics CBCL	8	1	2.13	2.00	0.991	1	4
mathematics TRF	9	0	2.44	2.00	0.882	1	4
mathematics YSR	9	0	2.67	3.00	1.118	1	4
Finnish CBCL	8	1	2.25	2.00	0.707	1	3
Finnish TRF	0	9					
Finnish YSR	9	0	2.78	3.00	0.833	1	4
TAU 3							
mathematics CBCL	9	0	2.67	3.00	0.707	2	4
mathematics TRF	9	0	2.67	3.00	1.118	1	4
mathematics YSR	9	0	3.44	4.00	0.726	2	4
Finnish CBCL	9	0	2.56	3.00	0.527	2	3
Finnish TRF	9	0	2.56	3.00	0.882	1	4
Finnish YSR	9	0	3.22	3.00	0.667	2	4
TAU 7							
mathematics CBCL	6	1	2.83	3.00	0.753	2	4
mathematics TRF	3	4	1.67	2.00	0.577	1	2
mathematics YSR	6	1	2.50	2.50	0.548	2	3
Finnish CBCL	6	1	3.00	3.00	0.000	3	3
Finnish TRF	7	0	2.29	2.00	0.756	1	3
Finnish YSR	6	1	2.00	2.00	0.894	1	3

Internalizing symptoms

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Internalizing symptoms		Valid	Missing					
EASE 3	withdrawn depressed							
	CBCL	4	5	2.00	1.00	2.828	0	6
	TRF	0	9					
	YSR	5	4	3.80	4.00	2.683	1	8
	somatic complaints							
	CBCL	4	5	0.50	0.00	1.000	0	2
	TRF	0	9					
	YSR	5	4	2.80	3.00	1.304	1	4
	anxious depressed							
	CBCL	4	5	1.75	2.00	1.500	0	3
	TRF	0	9					
	YSR	5	4	3.40	1.00	4.827	1	12
EASE 7	withdrawn depressed							
	CBCL	5	3	2.80	3.00	2.168	0	6
	TRF	0	8					
	YSR	7	1	2.71	2.00	2.563	1	8
	somatic complaints							
	CBCL	5	3	2.60	3.00	1.140	1	4
	TRF	0	8					
	YSR	7	1	1.71	2.00	1.113	0	3
	anxious depressed							
	CBCL	5	3	2.80	3.00	1.924	0	5
	TRF	0	8					
	YSR	7	1	4.00	4.00	2.828	0	7

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Internalizing symptoms		Valid	Missing					
ART 3	withdrawn depressed							
	CBCL	5	4	3.20	4.00	1.643	1	5
	TRF	0	9					
	YSR	1	8	2.00	2.00		2	2
	somatic complaints							
	CBCL	5	4	2.40	1.00	3.715	0	9
	TRF	0	9					
	YSR	1	8	0.00	0.00		0	0
	anxious depressed							
	CBCL	5	4	6.60	7.00	5.320	1	14
	TRF	0	9					
	YSR	1	8	1.00	1.00		1	1
ART 7	withdrawn depressed							
	CBCL	4	5	4.25	4.00	2.217	2	7
	TRF	0	9					
	YSR	9	0	4.33	3.00	3.571	2	11
	somatic complaints							
	CBCL	4	5	3.75	4.00	2.217	1	6
	TRF	0	9					
	YSR	9	0	1.67	0.00	3.240	0	10
	anxious depressed							
	CBCL	4	5	5.75	6.50	3.594	1	9
	TRF	0	9					
	YSR	9	0	6.11	1.00	9.333	0	26

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Internalizing symptoms		Valid	Missing					
MATH 7	withdrawn depressed							
	CBCL	8	1	4.50	4.50	3.423	0	11
	TRF	9	0	4.22	5.00	2.587	0	9
	YSR	9	0	3.78	4.00	2.539	0	8
	somatic complaints							
	CBCL	8	1	1.63	1.50	1.061	0	3
	TRF	9	0	0.67	0.00	1.000	0	3
	YSR	9	0	3.22	3.00	1.563	0	5
	anxious depressed							
	CBCL	8	1	4.25	5.00	2.915	0	8
	TRF	9	0	5.33	7.00	4.330	0	11
	YSR	9	0	6.00	5.00	4.444	0	15

		N		M	Md	SD	Min	Max
Internalizing symptoms		Valid	Missing					
TAU 3	withdrawn depressed							
	CBCL	9	0	1.00	1.00	1.225	0	3
	TRF	9	0	3.89	3.00	3.551	0	11
	YSR	9	0	2.22	2.00	1.986	0	5
	somatic complaints							
	CBCL	9	0	1.11	1.00	1.167	0	3
	TRF	9	0	0.67	1.00	0.707	0	2
	YSR	9	0	3.11	1.00	3.655	0	9
	anxious depressed							
	CBCL	9	0	2.22	1.00	2.728	0	7
	TRF	9	0	5.33	4.00	4.444	0	15
	YSR	9	0	4.78	3.00	4.631	0	13
TAU 7	withdrawn depressed							
	CBCL	6	1	3.17	3.50	2.483	0	6
	TRF	7	0	2.00	1.00	2.309	0	5
	YSR	6	1	3.67	3.00	2.251	2	8
	somatic complaints							
	CBCL	6	1	2.67	3.00	1.862	0	5
	TRF	7	0	1.57	0.00	2.440	0	6
	YSR	6	1	4.67	5.50	3.882	0	9
	anxious depressed							
	CBCL	6	1	3.17	2.00	4.021	0	10
	TRF	7	0	2.14	0.00	3.388	0	9
	YSR	6	1	5.83	3.50	7.627	0	21

Thought problems, social problems, and attention problems

		N		M	Md	SD	Min	Max
		Valid	Missing					
EASE 3	thought problems							
	CBCL	4	5	0.25	0.00	0.500	0	1
	TRF	0	9					
	YSR	5	4	3.00	3.00	2.121	0	5
	social problems							
	CBCL	4	5	3.00	2.50	2.944	0	7
	TRF	0	9					
	YSR	5	4	2.60	1.00	2.881	0	7
	attention problems							
	CBCL	4	5	7.00	8.00	3.830	2	10
	TRF	0	9					
	YSR	5	4	4.00	4.00	2.550	1	8
EASE 7	thought problems							
	CBCL	6	2	0.83	0.50	1.169	0	3
	TRF	0	8					
	YSR	7	1	2.00	1.00	2.236	0	5
	social problems							
	CBCL	5	3	2.20	1.00	2.683	0	6
	TRF	0	8					
	YSR	7	1	3.57	3.00	1.988	1	7
	attention problems							
	CBCL	5	3	3.60	5.00	1.949	1	5
	TRF	0	8					
	YSR	7	1	6.71	7.00	2.215	2	9

Lessons Learned from Horses

		N		M	Md	SD	Min	Max
		Valid	Missing					
ART 3	thought problems							
	CBCL	5	4	2.00	1.00	2.345	0	5
	TRF	0	9					
	YSR	1	8	1.00	1.00		1	1
	social problems							
	CBCL	5	4	5.40	7.00	2.881	1	8
	TRF	0	9					
	YSR	1	8	2.00	2.00		2	2
	attention problems							
ART 7	CBCL	5	4	7.80	7.00	2.775	5	12
	TRF	0	9					
	YSR	1	8	2.00	2.00		2	2
	thought problems							
	CBCL	4	5	1.25	1.50	0.957	0	2
	TRF	0	9					
	YSR	9	0	2.78	2.00	4.324	0	14
	social problems							
	CBCL	4	5	5.25	5.00	4.425	1	10
MATH 7	TRF	0	9					
	YSR	9	0	3.67	3.00	3.937	0	13
	attention problems							
	CBCL	4	5	8.25	9.00	3.096	4	11
	TRF	0	9					
	YSR	9	0	7.11	7.00	4.702	0	15
	thought problems							
	CBCL	9	0	1.44	1.00	1.878	0	5
	TRF	9	0	1.00	0.00	1.323	0	3
TAU 3	YSR	9	0	2.78	2.00	1.856	0	5
	social problems							
	CBCL	8	1	5.25	5.00	3.059	1	10
	TRF	9	0	4.00	3.00	3.571	1	12
	YSR	9	0	2.78	2.00	2.048	0	7
	attention problems							
	CBCL	8	1	9.38	8.50	4.779	2	16
	TRF	9	0	11.00	8.00	6.164	5	22
	YSR	9	0	6.44	7.00	1.878	4	9
TAU 7	thought problems							
	CBCL	9	0	0.56	0.00	0.726	0	2
	TRF	9	0	0.89	0.00	1.965	0	6
	YSR	9	0	2.78	2.00	3.114	0	10
	social problems							
	CBCL	9	0	3.11	2.00	2.315	0	7
	TRF	9	0	3.89	2.00	5.278	0	17
	YSR	9	0	2.33	2.00	1.803	0	5
	attention problems							
TAU 7	CBCL	9	0	5.89	6.00	3.983	0	12
	TRF	9	0	15.44	16.00	7.939	6	32
	YSR	9	0	5.44	6.00	3.005	0	9
	thought problems							
	CBCL	6	1	0.50	0.50	0.548	0	1
	TRF	7	0	1.14	0.00	3.024	0	8
	YSR	6	1	1.33	1.50	1.211	0	3
	social problems							
	CBCL	6	1	2.67	2.00	2.338	0	7
TAU 7	TRF	7	0	2.86	2.00	3.132	0	9
	YSR	6	1	3.50	2.00	4.370	0	12
	attention problems							
	CBCL	6	1	4.50	4.00	3.146	0	8
	TRF	7	0	9.00	9.00	7.416	1	21
	YSR	6	1	6.17	6.00	3.125	3	12
	thought problems							
	CBCL	6	1	0.50	0.50	0.548	0	1
	TRF	7	0	1.14	0.00	3.024	0	8
	YSR	6	1	1.33	1.50	1.211	0	3

Externalizing symptoms
aggressive behavior, and rule-breaking behavior

Externalizing symptoms		N		M	Md	SD	Min	Max
		Valid	Missing					
EASE 3	aggressive behavior							
	CBCL	4	5	8.75	8.00	5.439	3	16
	TRF	0	9					
	YSR	5	4	7.20	8.00	3.194	3	11
	rule-breaking behavior							
	CBCL	4	5	1.50	1.50	1.732	0	3
EASE 7	TRF	0	9					
	YSR	5	4	1.60	1.00	1.817	0	4
	aggressive behavior							
	CBCL	5	3	6.20	7.00	2.168	3	8
	TRF	0	8					
	YSR	7	1	8.43	7.00	5.159	1	17
MATH 7	rule-breaking behavior							
	CBCL	5	3	2.60	4.00	1.949	0	4
	TRF	0	8					
	YSR	7	1	3.71	4.00	2.215	1	7

Externalizing symptoms		N		M	Md	SD	Min	Max
		Valid	Missing					
MATH 7	aggressive behavior							
	CBCL	8	1	8.00	7.50	4.690	2	15
	TRF	9	0	3.67	1.00	5.454	0	14
	YSR	9	0	9.67	11.00	5.500	2	17
	rule-breaking behavior							
	CBCL	8	1	2.88	3.00	2.295	0	6
ART 3	TRF	9	0	2.33	1.00	3.122	0	9
	YSR	9	0	4.11	3.00	3.756	1	13

Externalizing symptoms		N		M	Md	SD	Min	Max
		Valid	Missing					
ART 3	aggressive behavior							
	CBCL	5	4	11.20	10.00	9.859	3	27
	TRF	0	9					
	YSR	1	8	5.00	5.00		5	5
	rule-breaking behavior							
	CBCL	5	4	2.20	1.00	3.347	0	8
ART 7	TRF	0	9					
	YSR	1	8	2.00	2.00		2	2
	aggressive behavior							
	CBCL	4	5	10.00	10.00	4.397	5	15
	TRF	0	9					
	YSR	9	0	13.11	14.00	8.358	1	28
ART 7	rule-breaking behavior							
	CBCL	4	5	4.75	4.00	1.500	4	7
	TRF	0	9					
	YSR	9	0	5.22	5.00	2.863	1	8

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Externalizing symptoms		Valid	Missing					
TAU 3	aggressive behavior							
	CBCL	9	0	6.00	2.00	6.837	0	19
	TRF	9	0	12.11	5.00	14.075	0	38
	YSR	9	0	5.67	4.00	3.841	0	13
	rule-breaking behavior							
	CBCL	9	0	1.56	0.00	2.651	0	8
	TRF	9	0	1.67	0.00	2.345	0	6
	YSR	9	0	2.00	1.00	2.915	0	9
TAU 7	aggressive behavior							
	CBCL	6	1	4.00	2.00	5.586	0	15
	TRF	7	0	4.29	1.00	6.343	0	14
	YSR	6	1	7.17	5.50	4.997	3	17
	rule-breaking behavior							
	CBCL	6	1	1.67	0.50	2.733	0	7
	TRF	7	0	1.43	0.00	3.359	0	9
	YSR	6	1	4.00	3.50	2.530	1	7

Aggression

anger, hostility, physical aggression, and verbal aggression

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Aggression		Valid	Missing					
Anger								
	pre-test	58	2	15.90	15.00	4.965	6	28
	post-test	54	6	15.74	15.00	4.900	7	28
Hostility								
	pre-test	58	2	13.81	13.00	5.101	6	25
	post-test	54	6	14.31	15.00	4.918	6	30
Physical aggression								
	pre-test	58	2	19.03	18.00	7.031	8	36
	post-test	54	6	20.07	19.00	6.974	8	36
Verbal aggression								
	pre-test	58	2	11.02	10.00	3.552	4	18
	post-test	54	6	11.54	12.00	3.565	4	20

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Aggression		Valid	Missing					
EASE 3	Anger							
	pre-test	9	0	18.22	16.00	3.866	14	24
	post-test	9	0	16.11	16.00	4.485	10	24
	Hostility							
	pre-test	9	0	13.00	13.00	3.202	9	18
	post-test	9	0	12.00	13.00	4.822	6	19
	Physical aggression							
	pre-test	9	0	22.89	25.00	4.986	12	28
	post-test	9	0	21.56	24.00	6.267	12	31
	Verbal aggression							
	pre-test	9	0	11.33	10.00	5.172	4	17
	post-test	9	0	9.56	10.00	3.468	4	14
EASE 7	Anger							
	pre-test	6	2	12.00	11.50	5.899	6	23
	post-test	5	3	10.60	11.00	2.302	7	13
	Hostility							
	pre-test	6	2	13.33	10.50	6.022	9	24
	post-test	5	3	10.80	11.00	2.864	7	15
	Physical aggression							
	pre-test	6	2	18.50	16.00	7.662	11	33
	post-test	5	3	14.20	15.00	2.775	10	17
	Verbal aggression							
	pre-test	6	2	9.83	8.50	3.312	7	14
	post-test	5	3	9.40	9.00	2.510	6	13

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Aggression		Valid	Missing					
ART 3	Anger							
	pre-test	9	0	13.44	13.00	3.941	9	21
	post-test	9	0	14.67	14.00	3.240	10	19
	Hostility							
	pre-test	9	0	13.44	14.00	5.388	6	24
	post-test	9	0	14.67	15.00	2.828	10	18
	Physical aggression							
	pre-test	9	0	13.89	13.00	6.489	8	30
	post-test	9	0	15.11	16.00	4.428	8	20
	Verbal aggression							
ART 7	pre-test	9	0	9.89	10.00	2.147	6	13
	post-test	9	0	11.22	12.00	1.481	9	13
	Anger							
	pre-test	9	0	17.22	17.00	5.932	8	28
	post-test	7	2	19.86	19.00	6.040	12	28
	Hostility							
	pre-test	9	0	12.00	10.00	6.124	6	25
	post-test	7	2	15.00	13.00	5.627	7	23
	Physical aggression							
	pre-test	9	0	20.00	18.00	6.910	10	31
MATH 7	post-test	7	2	26.00	26.00	8.888	11	36
	Verbal aggression							
	pre-test	9	0	11.44	11.00	4.096	7	18
	post-test	7	2	14.86	16.00	3.579	8	18
	Anger							
	pre-test	9	0	15.22	14.00	4.577	9	22
	post-test	9	0	15.11	13.00	4.859	9	21
	Hostility							
	pre-test	9	0	13.78	14.00	3.993	9	20
	post-test	9	0	14.89	15.00	4.285	9	21
TAU 3	Physical aggression							
	pre-test	9	0	20.78	20.00	5.761	11	31
	post-test	9	0	22.11	19.00	7.008	12	33
	Verbal aggression							
	pre-test	9	0	10.22	10.00	2.438	7	14
	post-test	9	0	9.67	9.00	2.500	6	13
	Anger							
	pre-test	9	0	15.67	15.00	4.770	6	22
	post-test	9	0	16.00	17.00	5.244	10	26
	Hostility							
TAU 7	pre-test	9	0	15.44	18.00	5.053	9	21
	post-test	9	0	17.00	17.00	3.640	10	22
	Physical aggression							
	pre-test	9	0	15.78	14.00	6.220	10	29
	post-test	9	0	18.67	16.00	6.461	12	32
	Verbal aggression							
	pre-test	9	0	9.67	10.00	2.062	6	13
	post-test	9	0	13.00	12.00	2.345	10	16
	Anger							
	pre-test	7	0	18.86	18.00	3.671	14	26
TAU 7	post-test	6	1	16.83	15.50	4.579	14	26
	Hostility							
	pre-test	7	0	16.00	13.00	6.583	7	24
	post-test	6	1	14.50	14.00	8.643	6	30
	Physical aggression							
	pre-test	7	0	21.86	21.00	8.859	10	36
	post-test	6	1	22.33	21.00	5.086	17	29
	Verbal aggression							
	pre-test	7	0	15.29	15.00	2.059	13	18
	post-test	6	1	13.50	14.50	5.541	4	20

Empathy

empathic concern, fantasy, and perspective-taking

Empathy	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	Valid	Missing					
Empathic concern							
pre-test	55	5	11.31	11.00	2.332	3	17
post-test	53	7	10.70	11.00	2.391	1	16
Fantasy							
pre-test	55	5	18.73	18.00	6.196	7	31
post-test	53	7	18.72	18.00	5.852	7	35
Perspective taking							
pre-test	55	5	20.60	20.00	5.763	10	35
post-test	53	7	21.58	21.00	5.112	13	35

	Empathy	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
		Valid	Missing					
EASE 3	Empathic concern							
	pre-test	9	0	9.33	10.00	3.041	3	13
	post-test	9	0	8.89	9.00	1.691	7	11
	Fantasy							
	pre-test	9	0	17.33	16.00	4.416	11	23
	post-test	9	0	17.11	19.00	4.457	7	22
	Perspective-taking							
	pre-test	9	0	18.00	19.00	5.362	10	26
	post-test	9	0	18.78	19.00	2.386	15	21
EASE 7	Empathic concern							
	pre-test	5	3	10.00	10.00	1.000	9	11
	post-test	4	4	8.25	9.00	5.439	1	14
	Fantasy							
	pre-test	5	3	14.60	15.00	2.302	12	18
	post-test	4	4	13.50	14.50	3.109	9	16
	Perspective-taking							
	pre-test	5	3	16.20	16.00	3.962	11	22
	post-test	4	4	16.75	15.50	3.594	14	22

		N		Md	Md	SD	Min	Max
Empathy		Valid	Missing					
ART 3	Empathic concern							
	pre-test	9	0	12.56	13.00	1.333	10	15
	post-test	9	0	11.44	12.00	2.128	7	14
	Fantasy							
	pre-test	9	0	17.11	15.00	6.234	11	31
	post-test	9	0	17.56	16.00	4.799	10	25
	Perspective-taking							
	pre-test	9	0	22.67	23.00	2.598	18	27
ART 7	post-test	9	0	21.44	22.00	2.128	17	24
	Empathic concern							
	pre-test	8	1	11.00	10.50	2.507	8	16
	post-test	7	2	11.57	12.00	1.272	9	13
	Fantasy							
	pre-test	8	1	21.13	22.00	8.149	11	31
	post-test	7	2	20.57	18.00	5.503	15	30
	Perspective-taking							
MATH 7	pre-test	8	1	21.25	19.00	5.365	15	31
	post-test	7	2	20.71	20.00	1.799	19	24
	Empathic concern							
	pre-test	9	0	11.78	12.00	2.333	8	15
	post-test	9	0	10.67	10.00	1.658	9	13
	Fantasy							
	pre-test	9	0	19.89	21.00	4.910	11	27
	post-test	9	0	16.11	17.00	4.167	7	21
TAU 3	Perspective-taking							
	pre-test	9	0	17.78	16.00	4.410	13	28
	post-test	9	0	18.44	19.00	2.242	15	23
	Empathic concern							
	pre-test	8	1	12.00	12.00	0.756	11	13
	post-test	9	0	12.56	12.00	1.333	12	16
	Fantasy							
	pre-test	8	1	22.00	23.00	7.111	7	31
TAU 7	post-test	9	0	25.67	25.00	5.788	16	35
	Perspective-taking							
	pre-test	8	1	28.38	27.00	4.565	22	35
	post-test	9	0	30.11	31.00	4.137	24	35
	Empathic concern							
	pre-test	7	0	12.14	12.00	2.610	9	17
	post-test	6	1	10.17	10.00	1.169	9	12
	Fantasy							
TAU 7	pre-test	7	0	17.57	16.00	6.997	10	30
	post-test	6	1	17.67	18.00	5.465	11	26
	Perspective-taking							
	pre-test	7	0	18.43	18.00	5.094	12	28
	post-test	6	1	22.17	23.00	5.037	13	27
	Empathic concern							
	pre-test	7	0	12.14	12.00	2.610	9	17
	post-test	6	1	10.17	10.00	1.169	9	12

Locus of control

external locus of control and internal locus of control

Locus of Control	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	Valid	Missing					
External locus of control							
pre-test	52	8	72.46	73.00	14.283	39	107
post-test	45	15	71.16	74.00	14.823	36	102
Internal locus of control							
pre-test	54	6	46.09	45.00	8.277	25	61
post-test	49	11	45.41	47.00	10.241	22	70

	Locus of Control	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
		Valid	Missing					
EASE 3	External locus of control							
	pre-test	9	0	75.33	75.00	13.919	55	98
	post-test	8	1	67.13	72.50	17.876	36	85
	Internal locus of control							
	pre-test	9	0	46.00	47.00	8.832	35	61
	post-test	9	0	38.22	40.00	10.281	22	54
EASE 7	External locus of control							
	pre-test	6	2	74.00	76.00	18.676	45	94
	post-test	5	3	77.80	74.00	14.464	64	102
	Internal locus of control							
	pre-test	5	3	50.20	55.00	14.584	25	60
	post-test	6	2	48.17	51.50	16.726	23	70

	Locus of Control	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
		Valid	Missing					
ART 3	External locus of control							
	pre-test	8	1	67.38	67.00	12.466	50	85
	post-test	6	3	67.17	72.50	13.556	46	80
	Internal locus of control							
	pre-test	9	0	42.22	42.00	5.783	32	54
	post-test	6	3	46.83	46.00	6.998	40	60
ART 7	External locus of control							
	pre-test	7	2	81.00	77.00	9.916	72	101
	post-test	5	4	74.00	77.00	12.145	58	89
	Internal locus of control							
	pre-test	8	1	47.38	45.50	9.516	31	61
	post-test	5	4	48.20	47.00	4.604	44	56

	Locus of Control	<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
		Valid	Missing					
MATH 7	External locus of control							
	pre-test	8	1	70.00	73.50	14.283	39	87
	post-test	7	2	77.43	76.00	4.650	73	85
	Internal locus of control							
	pre-test	9	0	47.22	49.00	7.965	31	56
	post-test	8	1	48.50	51.00	5.292	39	54

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Locus of Control		Valid	Missing					
TAU 3	External locus of control							
	pre-test	7	2	74.57	72.00	16.989	55	107
	post-test	7	2	71.57	73.00	20.395	39	101
	Internal locus of control							
	pre-test	7	2	47.43	48.00	6.503	37	57
	post-test	8	1	44.75	47.50	13.456	26	65
TAU 7	External locus of control							
	pre-test	7	0	65.43	69.00	13.176	41	82
	post-test	7	0	65.71	65.00	15.756	48	88
	Internal locus of control							
	pre-test	7	0	44.00	42.00	5.859	38	56
	post-test	7	0	46.29	47.00	7.631	35	59

Loneliness

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Loneliness		Valid	Missing					
Loneliness								
	pre-test	53	7	33.40	30.00	13.793	16	78
	post-test	51	9	32.65	29.00	12.026	16	68

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Loneliness		Valid	Missing					
EASE 3	Loneliness							
	pre-test	7	2	31.43	32.00	8.772	17	43
	post-test	9	0	33.00	35.00	9.407	20	45
EASE 7	Loneliness							
	pre-test	8	0	33.50	29.50	18.746	20	78
	post-test	8	0	32.38	28.50	9.380	24	49

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Loneliness		Valid	Missing					
ART 3	Loneliness							
	pre-test	7	2	36.57	38.00	11.238	18	53
	post-test	6	3	34.83	40.00	10.741	16	44
ART 7	Loneliness							
	pre-test	9	0	34.44	31.00	7.892	26	50
	post-test	8	1	35.13	28.00	18.879	16	68

		<i>N</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Loneliness		Valid	Missing					
MATH 7	Loneliness pretest	9	0	34.89	25.00	24.096	16	77
	Loneliness post-test	5	4	29.60	20.00	17.242	17	58

Lessons Learned from Horses

		<i>N</i>		<i>M</i>	<i>Mid</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Loneliness		Valid	Missing					
TAU 3	Loneliness							
	pre-test	9	0	29.22	27.00	9.217	20	47
	post-test	9	0	29.11	28.00	7.590	20	43
TAU 7	Loneliness							
	pre-test	4	3	34.75	33.00	5.737	30	43
	post-test	6	1	34.83	32.50	13.556	22	59

Appendix 3. Reliability estimates

Reliability of the scales for ASEBA instrument (Cronbach's α)

Variable	YSR		CBCL		TRF	
	Number of items	α	Number of items	α	Number of items	α
withdrawn-depressed	7	.60	9	.77	9	.77
somatic complain	9	.73	9	.60	9	.47
anxious/depressed	16	.90	14	.79	18	.82
social problems	8	.72	8	.70	13	.83
thought problems	7	.72	7	.31	8	.82
attention problems	9	.56	11	.77	20	.87
rule-breaking behavior	11	.69	13	.72	9	.87
aggressive behavior	19	.83	20	.88	25	.96

YSR = Youth Self Report (students), CBCL = Child Behavior Check List (parents), TRF = Teacher Report Form (teachers)

Reliability of the ASEBA instrument (Cronbach's α), Youth Self-Report

Variable	Number of items	α pre-test	α post-test
withdrawn-depressed symptoms	7	.60	.69
somatic complain	9	.73	.69
anxious-depressed symptoms	16	.90	.92
social problems	8	.72	.77
thought problems	7	.72	.80
attention problems	9	.56	.65
rule-breaking behavior	11	.69	.66
aggressive behavior	19	.83	.91

Reliability of the scales for aggression (Cronbach's α)

Variable	Number of items	α pretest	α post-test
Anger	6	.69	.43
Hostility	6	.71	.48
Physical aggression	8	.80	.52
Verbal aggression	4	.65	.55

Reliability of the scales for empathy (Cronbach's α)

Variable	Number of items	α pretest	α post-test
Empathic concern	7	.71	.74
Fantasy	7	.71	.63
Perspective-taking	7	.73	.68

Reliability of the scales for locus of control (Cronbach's α)

Variable	Number of items	α pretest	α post-test
Internal locus of control	14	.73	.82
External locus of control	26	.81	.82

Reliability of the scales for loneliness (Cronbach's α)

Variable	Number of items	α pretest	α post-test
Loneliness	16	.84	.82

Appendix 4. Bivariate correlations of the ASEBA variables

Bivariate correlations of ASEBA sum variables used in this study. Spearman's rho correlation was conducted regarding students' (YSR), parents' (CBCL), and teachers' (TRF) data on internalized problems (withdrawn-depressed, somatic complaint, attention problems), thought problems, social problems, attention problems and externalized problems (aggressive behavior and rule-breaking).

Correlations																								
Sum variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 withdrawn depressed CBCL	1																							
2 withdrawn depressed TRF	.00	1																						
3 withdrawn depressed YSR	.13	-.28	1																					
4 somatic complain CBCL	.43**	.01	-.04	1																				
5 somatic complaint TRF	.18	.30	-.19	.30	1																			
6 somatic complain YSR	.07	.00	.38**	-.21	-.03	1																		
7 anxious depressed CBCL	.61**	.13	-.10	.28	-.14	-.18	1																	
8 anxious depressed TRF	-.09	.46**	-.39	-.20	.12	-.35	.38	1																
9 anxious-depressed YSR	.08	.05	.59**	.03	.04	.53**	-.12	-.11	1															
10 thought problems CBCL	.46**	.28	.00	.24	.14	.05	.46**	.05	.27	1														
11 thought problems TRF	.01	.21	-.17	-.12	.04	-.32	.13	.41*	-.11	.25	1													
12 thought problems YSR	.15	-.15	.30*	-.02	-.08	.33*	-.05	-.03	.58**	.24	-.37	1												
13 social problems CBCL	.51**	.11	.33	.26	-.19	.00	.60**	.03	.22	.44**	.27	.19	1											
14 social problems TRF	-.06	.21	-.15	.04	-.12	-.24	.40	.47*	.01	.11	.55**	-.26	.48*	1										
15 social problems YSR	-.05	-.09	.61**	-.10	.05	.26	-.18	-.26	.59**	.06	.02	.21	.18	.06	1									
16 attention problems CBCL	.39*	.26	.18	.18	-.15	.14	.63**	.05	.18	.52**	.13	.15	.65**	.35	-.05	1								
17 attention problems TRF	-.05	.11	-.12	.09	.05	.02	.09	-.04	.18	.31	.41*	-.15	.41	.52**	.17	.38	1							
18 attention problems YSR	-.05	.26	.42**	.14	.37	.22	-.13	.08	.64**	.24	.05	.26	.11	.06	.64**	.18	.07	1						
19 aggressive behavior CBCL	.37*	-.08	.16	.11	-.40	-.06	.62**	.23	.08	.41**	.35	.00	.56**	.58**	.00	.57**	.42*	-.10	1					
20 aggressive behavior TRF	-.23	-.12	-.15	-.02	-.05	-.06	.18	.05	-.03	.21	.24	-.20	.12	.49*	.12	.25	.73**	-.06	.40	1				
21 aggressive behavior YSR	.08	.42*	.23	.36*	.45*	.25	-.05	.09	.47**	.26	-.12	.32*	.01	-.10	.31*	.16	-.08	.56**	-.05	-.19	1			
22 rule-breaking CBCL	.54**	-.17	.20	.30	-.32	-.04	.55**	.09	.12	.56**	.37	.08	.41**	.26	.11	.45**	.25	.16	.63**	.24	.20	1		
23 rule-breaking TRF	.20	-.09	-.21	-.08	-.09	.02	.69**	.12	-.01	.42*	.20	.08	.34	.42*	.08	.63**	.50*	.10	.48*	.56**	-.10	.50*	1	
24 rule-breaking YSR	.32	-.06	.38**	.47**	.33	.22	.09	-.39	.29	.32	-.22	.24	.12	-.46*	.10	.36*	-.19	.33*	-.10	-.37	.59**	.31	-.12	1

**. p < .01. * p < .05

** p < .01, * p < .05

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Bivariate correlations listwise on internalizing symptoms (withdrawn-depressed, somatic complain, and anxious-depressed) based on parents' (CBCL), teachers' (TRF), and students' (YSR) data in pre-test.

Variable	1	2	3	4	5	6	7	8	9
1. withdrawn depressed CBCL	-								
2. withdrawn depressed TRF	.01	-							
3. withdrawn depressed YSR	-.06	-.20	-						
4. somatic complaints CBCL	.51*	.02	-.18	-					
5. somatic complaints TRF	.18	.41	-.28	.30	-				
6. somatic complaints YSR	.02	.09	.53*	-.22	-.04	-			
7. anxious depressed CBCL	.55**	.12	-.27	.23	-.14	-.13	-		
8. anxious depressed TRF	-.09	.46*	-.33	-.21	.12	-.28	.40	-	
9. anxious-depressed YSR	-.17	.16	.56**	-.30	.04	.59**	-.35	.01	-

** $p < 0.01$. * $p < 0.05$.

Listwise $n = 22$

Bivariate correlations listwise on thought problems, social problems, and attention problems based on parents' (CBCL), teachers' (TRF), and students' (YSR) data in pre-test.

Variable	1	2	3	4	5	6	7	8	9
1. thought problems CBCL	-								
2. thought problems TRF	.25	-							
3. thought problems YSR	.22	-.36	-						
4. social problems CBCL	.32	.26	-.16	-					
5. social problems TRF	.19	.59**	-.32	.46*	-				
6. social problems YSR	-.21	.11	-.02	-.14	.07	-			
7. attention problems CBCL	.54**	.14	-.05	.67**	.38	-.17	-		
8. attention problems TRF	.43*	.49*	-.21	.39	.50*	.07	.44*	-	
9. attention problems YSR	-.00	.15	.27	-.24	.07	.72**	-.13	-.06	-

** $p < 0.01$. * $p < 0.05$.

Listwise $n = 22$

Bivariate correlations listwise on internalized symptoms (withdrawn-depressed, somatic complain, and anxious-depressed) based on parents' (CBCL), teachers' (TRF), and students' (YSR) data in pre-test.

Variable	1	2	3	4	5	6
1. rule-breaking CBCL	-					
2. rule-breaking TRF	.49*	-				
3. rule-breaking YSR	.13	-.16	-			
4. aggressive behavior CBCL	.57**	.46*	-.19	-		
5. aggressive behavior TRF1	.25	.47*	-.41	.40	-	
6. aggressive behavior YSR	-.15	-.34	.50*	-.35	-.33	-

** $p < 0.01$. * $p < 0.05$.

Listwise $n = 22$

Appendix 5. Number of raters concerning ASEBA instrument in pre-test, post-test, and delayed post-test

	pre-test	post-test	delayed post-test	All
	N (%)	N (%)	N (%)	N (%)
CBCL	40 (67%)	24 (40%)	29 (48%)	17 (35%)
TRF	25 (42%)	32 (53%)	45 (75%)	15 (25%)
YSR	46 (77%)	50 (83%)	41 (68%)	29 (48%)
Total	60 (100%)	60 (100%)	60 (100%)	60 (100%)
CBCL = Child Behavior Check List (parents). TRF = Teacher Report Form. YSR = Youth Self Report				

Appendix 6. Number of participants concerning parallel instruments (aggression, empathy, loneliness, and locus of control)

		Aggression			Empathy			Loneliness			Locus of control		
		pretest	post-test	delayed post-test	pretest	post-test	delayed post-test	pretest	post-test	delayed post-test	pretest	post-test	delayed post-test
		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
EASE 3	data	9(100)	9 (100)	7 (78)	9(100)	9 (100)	6 (67)	9(100)	9 (100)	7 (78)	9(100)	9 (100)	7 (78)
	missing	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	3 (33)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	2 (22)
	All	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)
EASE 7	data	6 (75)	5 (63)	0 (0)	5 (63)	4 (50)	0 (0)	5 (63)	5 (63)	0 (0)	8(100)	5 (63)	4 (50)
	missing	2 (25)	3 (37)	8 (100)	3 (37)	4 (50)	8 (100)	3 (37)	3 (37)	8 (100)	0 (0)	3 (37)	4 (50)
	All	8(100)	8 (100)	8 (100)	8(100)	8 (100)	8 (100)	8(100)	8 (100)	8 (100)	8(100)	8 (100)	8 (100)
MATH 7	data	9(100)	7 (78)	8 (89)	8 (89)	7 (78)	7 (78)	9(100)	4 (44)	8 (89)	9(100)	8 (89)	7 (78)
	missing	0 (0)	2 (22)	1 (11)	1 (11)	2 (22)	2 (22)	0 (0)	5 (56)	1 (11)	0 (0)	1 (11)	2 (22)
	All	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)
ART 3	data	9(100)	9 (100)	7 (78)	9(100)	9 (100)	7 (78)	9(100)	9 (100)	7 (78)	6 (67)	6 (67)	4 (44)
	missing	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	2 (22)	3 (33)	3 (33)	5 (56)
	All	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)
ART 7	data	9(100)	9 (100)	5 (56)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	7 (78)	8 (89)	8 (89)
	missing	0 (0)	0 (0)	4 (44)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (22)	1 (11)	1 (11)
	All	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)
TAU 3	data	9(100)	9 (100)	9 (100)	8 (89)	9 (100)	8 (89)	9(100)	9 (100)	9 (100)	8 (89)	6 (67)	7 (78)
	missing	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)	1 (11)	3 (33)	2 (22)
	All	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)	9(100)	9 (100)	9 (100)
TAU 7	data	7(100)	6 (86)	7 (100)	7(100)	6 (86)	5 (71)	5 (71)	6 (86)	6 (86)	7(100)	7 (100)	7 (100)
	missing	0 (0)	1 (14)	0 (0)	0 (0)	1 (14)	2 (29)	2 (29)	1 (14)	1 (14)	0 (0)	0 (0)	0 (0)
	All	7(100)	7 (100)	7 (100)	7(100)	7 (100)	7 (100)	7(100)	7 (100)	7 (100)	7(100)	7 (100)	7 (100)

Appendix 7. Spearman's rho correlation concerning school success and relations with parents

Spearman's rho test indicating connections between students' relations with parents' (CBCL) and school success, as well as parents' (CBCL), teachers' (TRF), and students' (YSR) opinions regarding students' school success

Variable	1	2	3	4	5	6	7
1. getting along with parents CBCL	-						
2. success in mathematics CBCL	.11	-					
3. success in mathematics TRF	-.54*	.44	-				
4. success in mathematics YSR	.20	.07	.05	-			
5. success in Finnish CBCL	.19	.14	-.04	-.08	-		
6. success in Finnish TRF	.17	.05	.24	-.10	.13	-	
7. success in Finnish YSR	-.21	-.15	.14	.43**	-.03	.16	1

** . $p < .01$. * . $p < .05$

The scale for school success was 1 = poor. 2 = under average. 3 = average. and 4 = over average. and for the relations with parents 1 = worse. 2 = average. and 3 = better.

Success in mathematics (CBCL $n = 41$, TRF $n = 19$, YSR $n = 34$)

Success in Finnish (CBCL $n = 41$, TRF $n = 19$, YSR $n = 34$)

Appendix 8. Spearman's rho correlation concerning school success and relations with parents based on students' gender

Spearman's rho test indicating connections between boys' and girls' relations with parents' (CBCL) and school success, as well as parents' (CBCL), teachers' (TRF), and students' (YSR) opinions regarding students' school success

Spearman's rho test indicating boys' and girls' relation with parents and its connection with school success in mathematics and Finnish

Variable	1	2	3	4	5	6	7
boy							
1. getting along with parents CBCL	-						
2. success in mathematics CBCL	.07	-					
3. success in mathematics TRF	-.55*	.32	-				
4. success in mathematics YSR	.00	-.03	.11	-			
5. success in Finnish CBCL	.31	.10	-.12	-.10	-		
6. success in Finnish TRF	.00	.45	.30	-.44	.60	-	
7. success in Finnish YSR	-.14	-.10	.03	.42*	-.08	.00	-
girl							
1. getting along with parents CBCL	-						
2. success in mathematics CBCL	.17	-					
3. success in mathematics TRF	-.78	.24	-				
4. success in mathematics YSR	.76*	.18	-.50	-			
5. success in Finnish CBCL	-.09	.21	-.50	-.04	-		
6. success in Finnish TRF	.40	-.97**		.83	-.65	-	
7. success in Finnish YSR	-.29	-.83**	.54	.32	-.17	.83	-

** . $p < .01$. * . $p < .05$

The scale for school success was 1 = poor. 2 = under average. 3 = average. and 4 = over average. and for the relations with parents 1 = worse. 2 = average. and 3 = better.

boy (CBCL n = 30, TRF = 15, YSR n = 25)

girl (CBCL n = 11, TRF = 4, YSR n = 9)

Appendix 9. Spearman's rho correlation concerning school success and relations with parents based on students' grade in school

Spearman's rho test indicating connections between the 3rd grade students' and the 7th grade students' relations with parents' (CBCL) and school success, as well as parents' (CBCL), teachers' (TRF), and students' (YSR) opinions regarding students' school success

Spearman's rho test based on students' grade indicating the 3rd grade students' (N = 18) and the 7th grade students' (N = 23) relation with parents and its connection with school success in mathematics and Finnish

Variable	1	2	3	4	5	6	7
3 rd grade							
1. getting along with parents CBCL	-						
2. success in mathematics CBCL	.15	-					
3. success in mathematics TRF	-.78*	.32	-				
4. success in mathematics YSR	.14	.00	-.33	-			
5. success in Finnish CBCL	.26	.34	.18	-.06	-		
6. success in Finnish TRF	-.09	.31	.44	-.26	.28	-	
7. success in Finnish YSR	-.36	-.13	.25	.30	-.05	-.09	-
7 th grade							
1. getting along with parents CBCL	-						
2. success in mathematics CBCL	-.06	-					
3. success in mathematics TRF	-.50	.56	-				
4. success in mathematics YSR	.13	.05	.16	-			
5. success in Finnish CBCL	.19	-.01	-.22	-.14	-		
6. success in Finnish TRF	.42	-.30	-.50	-.32		-	
7. success in Finnish YSR	-.22	-.24	-.10	.44*	.01	.26	-

** . p < .01. * . p < .05

Students' school success in mathematics and Finnish was based on parents' (CBCL), teachers' (TRF), and students' (YSR) opinions instead of students' factual competence (how student succeeded if they were compared with the peer group). The scale was 1 = poor, 2 = under average, 3 = average, and 4 = over average.

Appendix 10. The Kruskal-Wallis Test results concerning comparisons between methods and groups

Kruskal-Wallis Test comparisons between methods and groups (this comparison was not conducted on ASEBA variables based on method, since ART and MATH had missing groups).

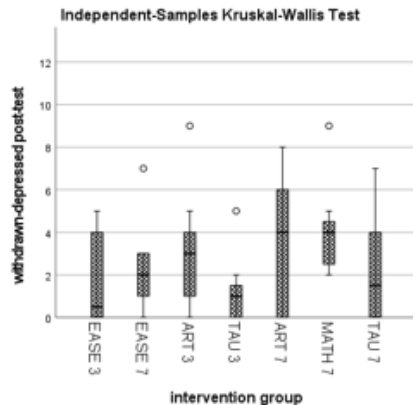
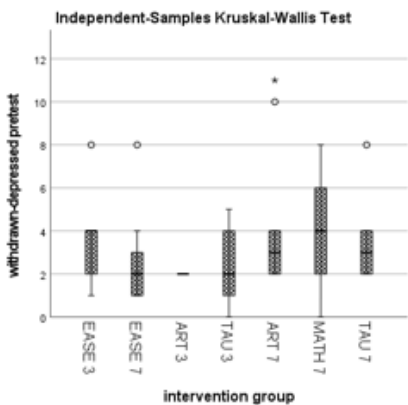
Frequencies of ASEBA instrument

Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	5	6	EASE 7	Valid	7	5
		Missing	4	3		Missing	1	3
ART	ART 3	Valid	1	9	ART 7	Valid	9	5
		Missing	8	0		Missing	0	4
MATH	-	Valid			MATH 7	Valid	9	8
		Missing				Missing	0	1
TAU	TAU 3	Valid	9	7	TAU 7	Valid	6	6
		Missing	0	2		Missing	1	1

Internalizing symptoms

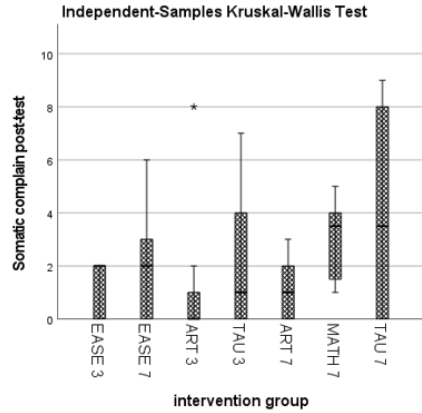
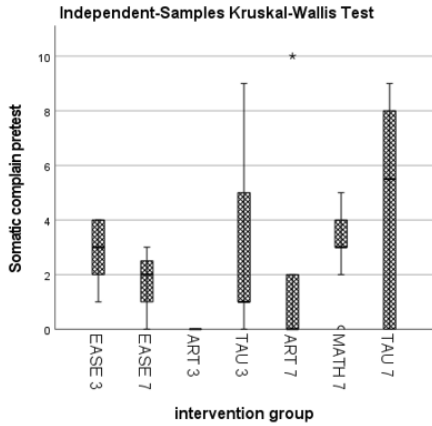
Withdrawn-depressed

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning withdrawn-depressed symptoms between groups, $H(6) = 4.976, p = .547$. Similarly, there were no significant differences in post-test (N = 46) between groups, $H(6) = 7.227, p = .300$.



Somatic complain

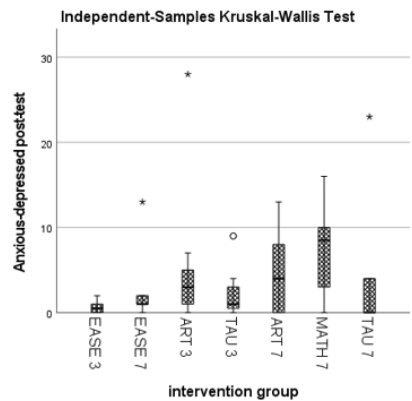
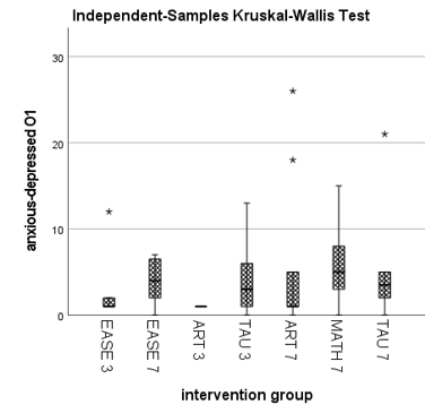
A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test ($N = 46$) concerning somatic complain symptoms between groups, $H(6) = 8.755, p = .188$. Similarly, there were no significant differences in post-test ($N = 46$) between groups, $H(6) = 5.875, p = .437$.



Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	5	6	EASE 7	Valid	7	5
		Missing	4	3		Missing	1	3
ART	ART 3	Valid	1	9	ART 7	Valid	9	5
		Missing	8	0		Missing	0	4
MATH	-				MATH 7	Valid	9	8
						Missing	0	1
TAU	TAU 3	Valid	9	7	TAU 7	Valid	6	6
		Missing	0	2		Missing	1	1

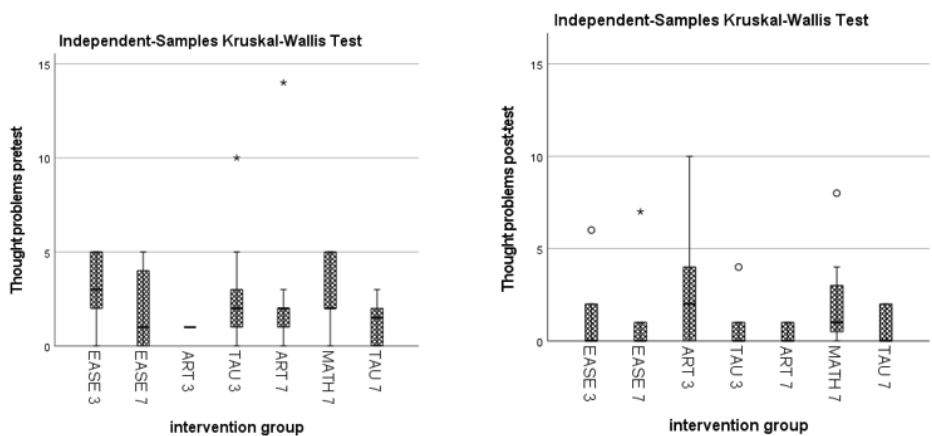
Anxious-depressed

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning anxious-depressed symptoms between groups, $H(6) = 3.548, p = .738$. Similarly, there were no significant differences in post-test (N = 46) between groups, $H(6) = 8.192, p = .224$.



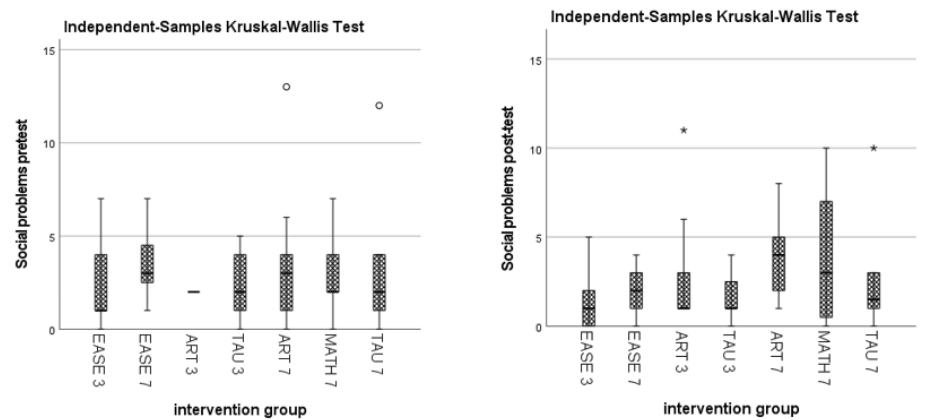
Thought problems

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning thought problems between groups, $H(6) = 3.766, p = .708$. Similarly, there were no significant differences in post-test (N = 46) between groups, $H(6) = 5.458, p = .487$.



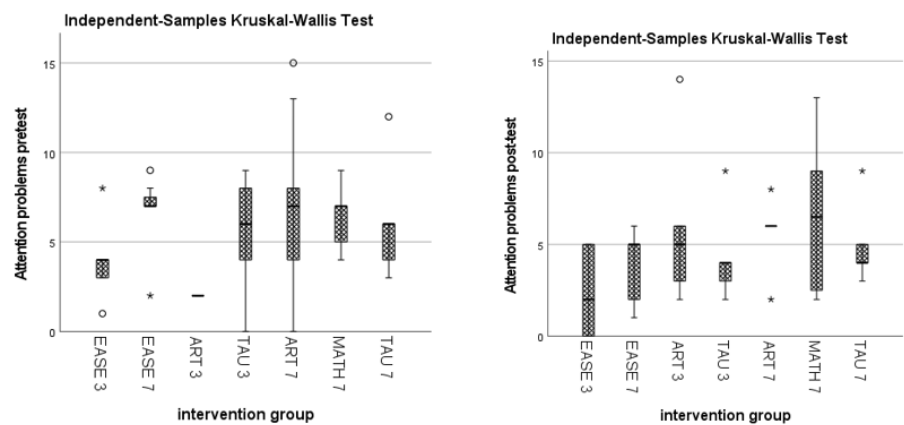
Social problems

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning social problems between groups, $H(6) = 1.857, p = .932$. Similarly, there were no significant differences in post-test (N = 46) between groups, $H(6) = 3.862, p = .695$.



Attention problems

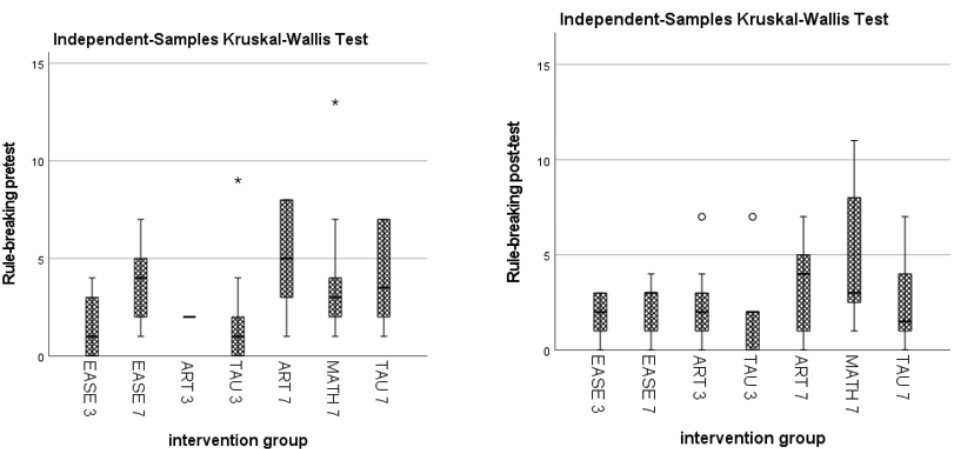
A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning attention problems between groups, $H(6) = 6.011, p = .422$. Similarly, there were no significant differences in post-test (N = 46) between groups, $H(6) = 7.583, p = .270$.



Externalizing symptoms

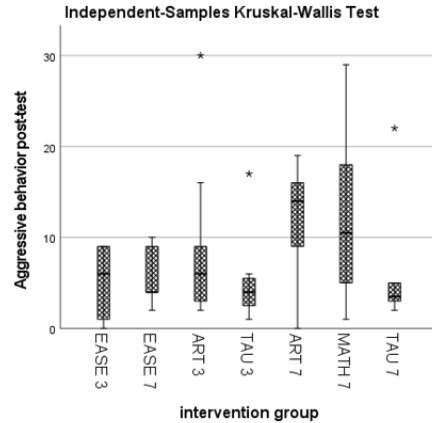
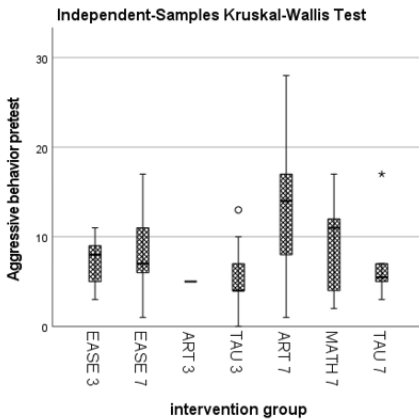
Rule-breaking

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 46) concerning rule-breaking symptoms between groups, $H(6) = 11.011, p = .088$. Similarly, there were no significant differences in post-test (N = 47) between groups, $H(6) = 6.819, p = .338$.



Aggressive behavior

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test ($N = 46$) concerning aggressive behavior between groups, $H(6) = 6.815$, $p = .338$. Similarly, there were no significant differences in post-test ($N = 47$) between groups, $H(6) = 6.306$, $p = .390$.



Aggression

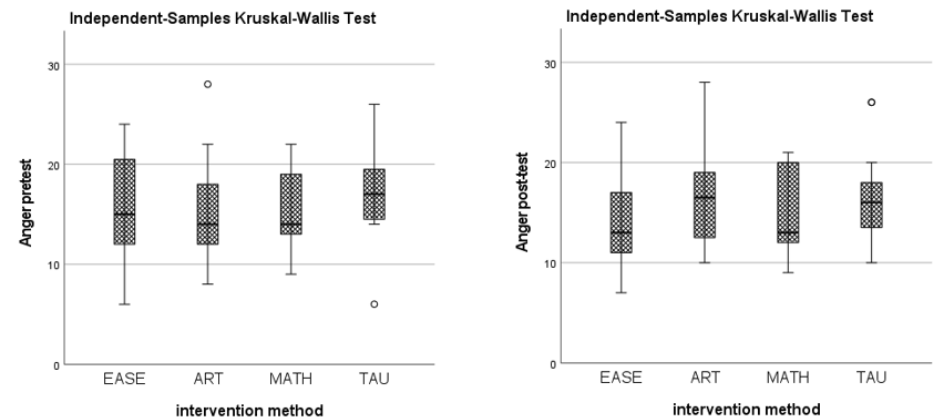
Frequencies of Aggression instrument

Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	9	9	EASE 7	Valid	6	5
		Missing	0	0		Missing	2	3
ART	ART 3	Valid	9	9	ART 7	Valid	9	7
		Missing	0	0		Missing	0	2
MATH	-	Valid	9	9	MATH 7	Valid	9	9
		Missing	0	0		Missing	0	0
TAU	TAU 3	Valid	9	9	TAU 7	Valid	7	6
		Missing	0	0		Missing	0	1

Anger

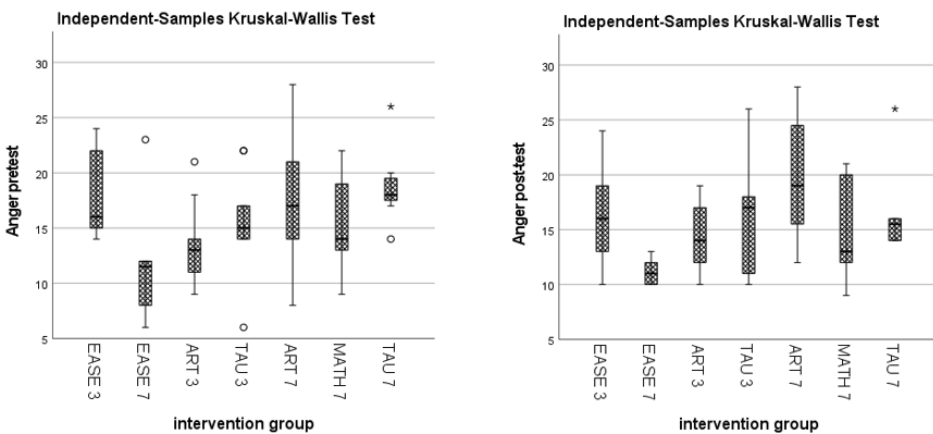
Method

A Kruskal-Wallis test showed that in pre-test ($N = 58$) there was a statistically significant difference concerning anger between methods, $H(3) = 2.358$, $p = .502$. There were no significant differences in post-test ($N = 54$) between groups, $H(3) = 2.596$, $p = .458$.



Group

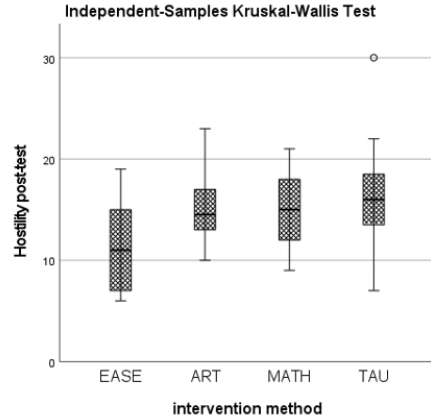
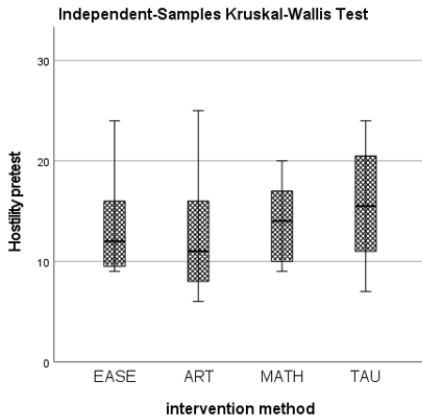
A Kruskal-Wallis test showed that in pre-test (N = 58) there was a statistically significant difference concerning anger between groups, $H(6) = 13.478, p = .036$. After Bonferroni adjusted correction for multiple comparisons, none of the comparisons were significant. There were no significant differences in post-test (N = 54) between groups, $H(6) = 10.516, p = .105$.



Hostility

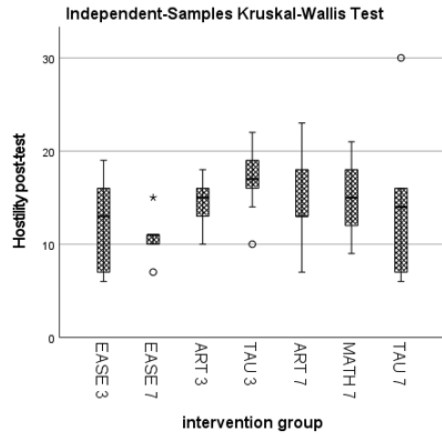
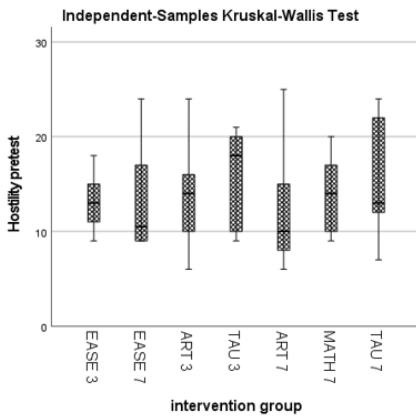
Method

A Kruskal-Wallis test showed that there were no statistically significant differences concerning hostility in pre-test between methods, $H(3) = 3.423, p = .331$. Similarly, there were no significant differences in post-test (N = 54) between groups, $H(3) = 5.987, p = .112$.



Group

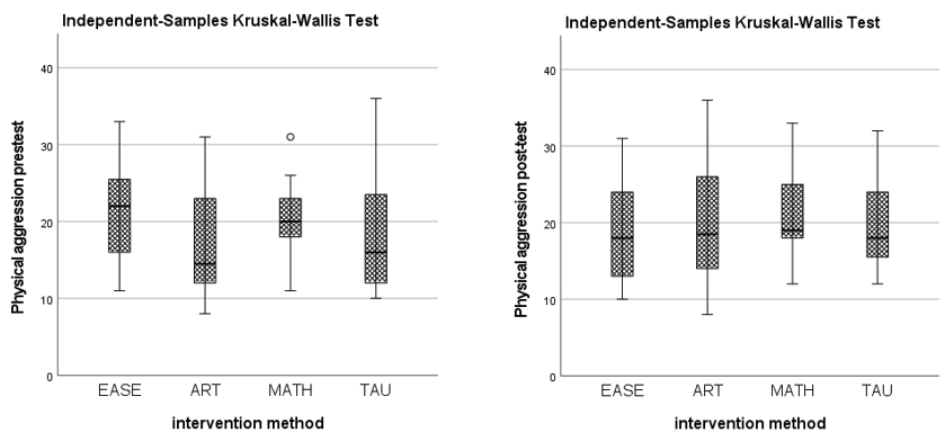
A Kruskal-Wallis test showed that there were no statistically significant differences concerning hostility in pre-test between groups, $H(6) = 4.147$, $p = .657$. Similarly, there were no significant differences in post-test ($N = 54$) between groups, $H(6) = 9.115$, $p = .167$.



Physical aggression

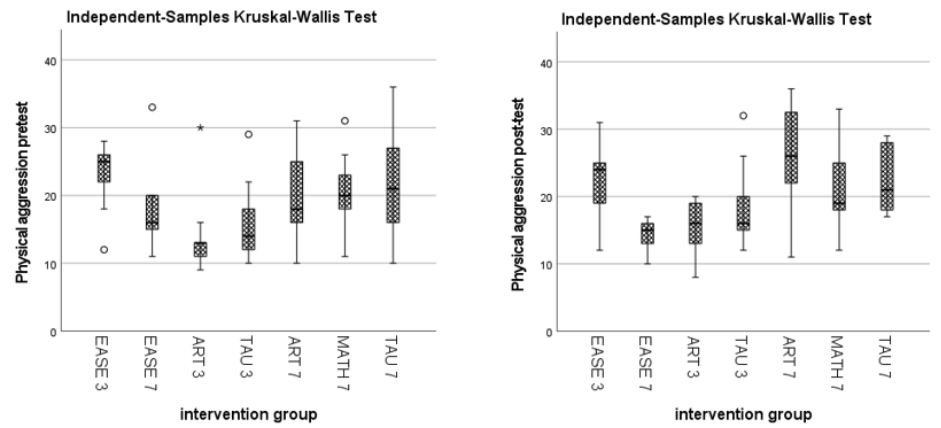
Method

A Kruskal-Wallis test showed that there were no statistically significant differences concerning physical aggression in pre-test ($N = 58$) between methods, $H(3) = 4.372$, $p = .224$. Similarly, there were no significant differences in post-test ($N = 54$) between groups, $H(3) = 1.293$, $p = .731$.



Group

A Kruskal-Wallis test showed in pre-test (N = 58) a statistically significant difference concerning physical aggression between groups, $H(6) = 12.836$, $p = .046$. After Bonferroni adjusted correction for multiple comparisons, none of the comparisons were significant. Similarly, there was a statistically significant difference in post-test (N = 54) between groups, $H(6) = 15.067$, $p = .020$. After Bonferroni correction for multiple comparisons none of the comparisons was statistically significant.

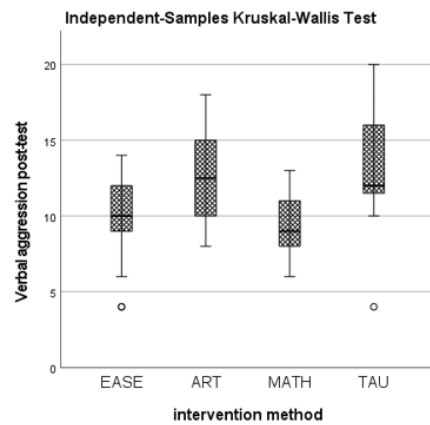
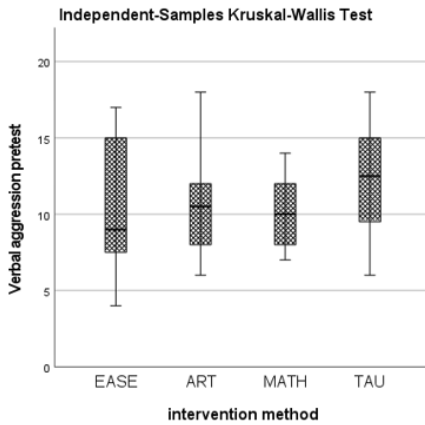


Verbal aggression

Method

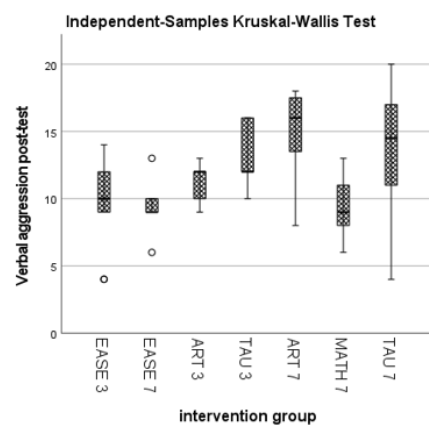
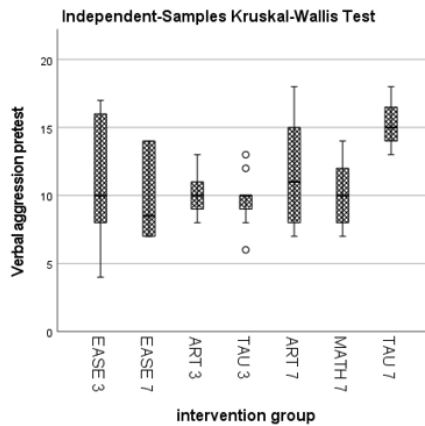
A Kruskal-Wallis test showed in pre-test (N = 58) that there were no statistically significant differences in verbal aggression between methods, $H(3) = 2.416$, $p = .491$. Though, there was a statistically significant difference in post-test (N = 54) between methods, $H(3) = 12.778$, $p = .005$. After adjusted Bonferroni correction

for multiple tests this difference was statistically significant between EASE and TAU, adjusted $p = .031$.



Group

A Kruskal-Wallis test showed in pre-test ($N = 58$) that there were no statistically significant differences in verbal aggression between methods, $H(6) = 11.841$, $p = .066$. However, a Kruskal-Wallis test showed a statistically significant difference in post-test ($N = 54$) between groups, $H(6) = 16.872$, $p = .010$. After Bonferroni correction for multiple comparisons none of the comparisons was statistically significant.



Empathy

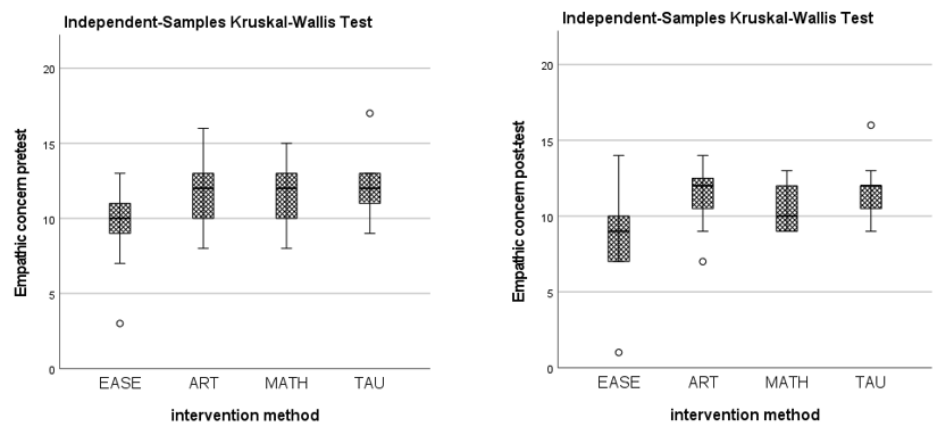
Frequencies of Empathy instrument

Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	9	9	EASE 7	Valid	5	4
		Missing	0	0		Missing	3	4
ART	ART 3	Valid	9	9	ART 7	Valid	8	7
		Missing	0	0		Missing	1	2
MATH	-	Valid			MATH 7	Valid	9	9
		Missing				Missing	0	0
TAU	TAU 3	Valid	8	9	TAU 7	Valid	7	6
		Missing	1	0		Missing	0	1

Empathic concern

Method

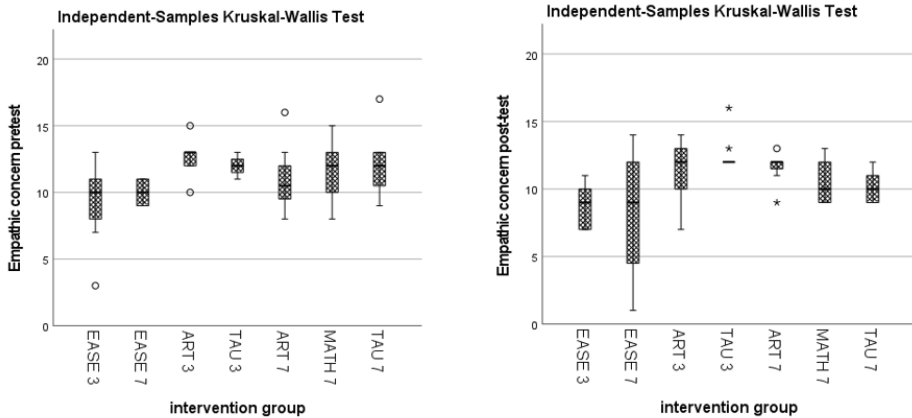
A Kruskal-Wallis test showed that there were statistically significant differences in pre-test (N = 55) in empathic concern between methods, $H(3) = 9.883, p = .020$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE and TAU, adjusted $p = .029$. Further, there was a statistically significant difference in post-test (N = 53), $H(3) = 12.227, p = .007$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE and TAU, adjusted $p = .020$, as well as between EASE and ART, adjusted $p = .009$.



Group

A Kruskal-Wallis test showed in pre-test (N = 55) that there were statistically significant differences in empathic concern between groups, $H(6) = 13.972, p = .030$. After Bonferroni adjusted correction for multiple comparisons, none of the comparisons were significant. In addition, in post-test (N = 53) a Kruskal-Wallis test

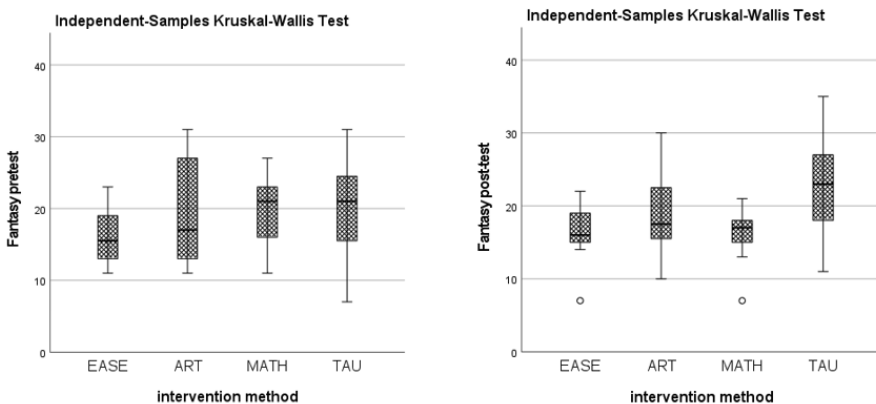
showed that there were statistically significant differences in empathic concern between groups, $H(6) = 18.462, p = .005$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE 3 and TAU 3, adjusted $p = .004$.



Fantasy

Method

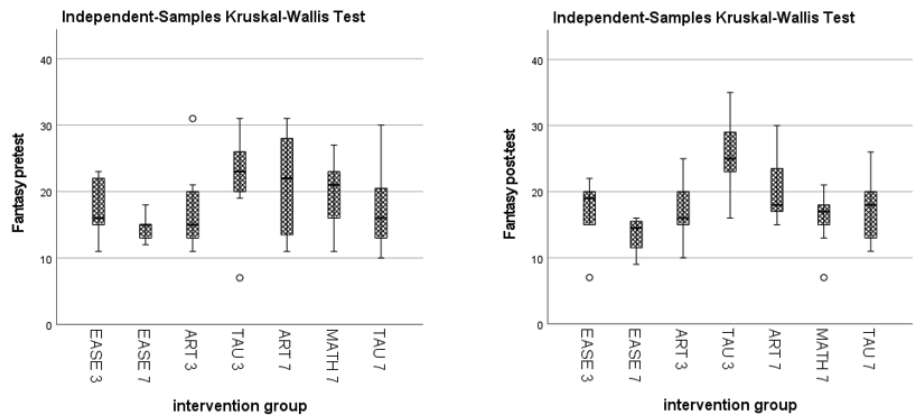
A Kruskal-Wallis test showed that there were statistically significant differences in pre-test ($N = 55$) in fantasy between methods, $H(3) = 3.011, p = .390$. However, there was a statistically significant difference in post-test ($N = 53$), $H(3) = 8.371, p = .039$. After Bonferroni adjusted correction for multiple comparisons, none of the comparisons were significant.



Group

A Kruskal-Wallis test showed in pre-test ($N = 55$) that there were no statistically significant differences in fantasy between groups, $H(6) = 7.809, p = .252$. Though,

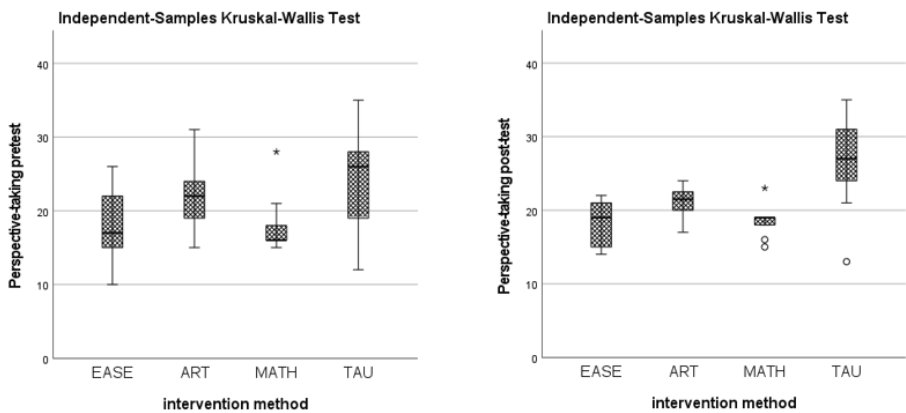
in post-test (N = 53) a Kruskal-Wallis test showed a statistically significant difference in fantasy between groups, $H(6) = 17.192, p = .009$. After Bonferroni adjusted correction for multiple comparisons, the difference was statistically significant between EASE 7 and TAU 3, adjusted $p = .009$.



Perspective-taking

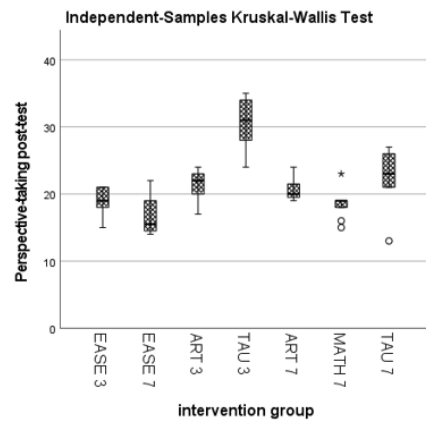
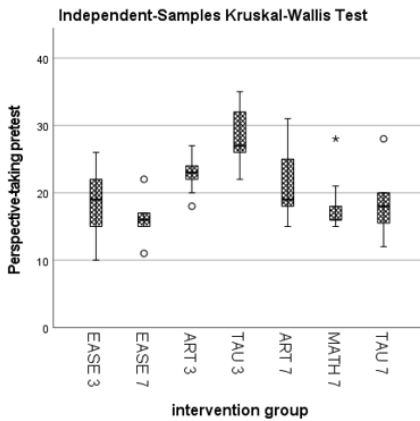
Method

A Kruskal-Wallis test showed that there were statistically significant differences in pre-test (N = 55) in empathic concern between methods, $H(3) = 12.146, p = .007$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE and TAU, adjusted $p = .039$. Further, there was a statistically significant difference in post-test (N = 53), $H(3) = 26.333, p = .001$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE and TAU, adjusted $p = .000$, as well as between MATH and TAU, adjusted $p = .000$.



Group

A Kruskal-Wallis test showed in pre-test ($N = 55$) that there were statistically significant differences in empathic concern between groups, $H(6) = 22.769, p = .001$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE 7 and TAU 3, adjusted $p = .008$, between MATH 7 and TAU 3, adjusted $p = .006$, between EASE 3 and TAU 3, adjusted $p = .021$, and between TAU 7 and TAU 3, adjusted $p = .047$. In addition, in post-test ($N = 53$) a Kruskal-Wallis test showed that there were statistically significant differences in empathic concern between groups, $H(6) = 30.894, p = .001$. After Bonferroni adjusted correction for multiple comparisons, this difference was statistically significant between EASE 7 and TAU 3, adjusted $p = .002$, between MATH 7 and TAU 3, adjusted $p = .000$, and between EASE 3 and TAU 3, adjusted $p = .001$.



Locus of control

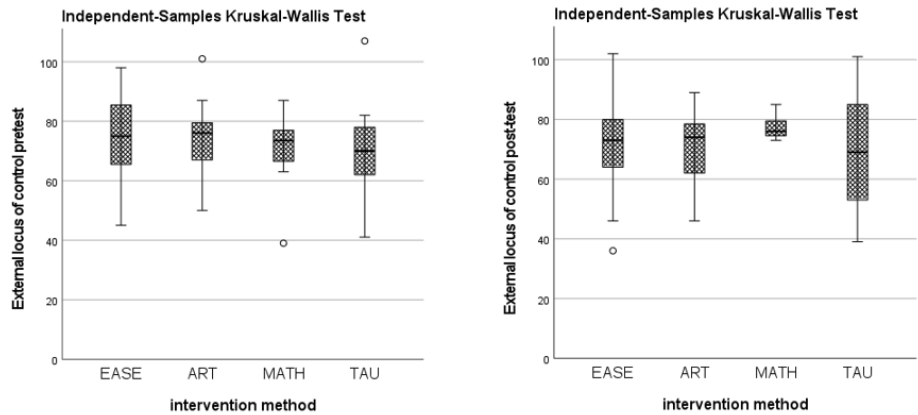
Frequencies of Locus of control instrument

Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	8	7	EASE 7	Valid	5	3
		Missing	1	2		Missing	3	5
ART	ART 3	Valid	6	4	ART 7	Valid	5	7
		Missing	3	5		Missing	4	2
MATH	-	Valid			MATH 7	Valid	7	7
		Missing				Missing	2	2
TAU	TAU 3	Valid	7	8	TAU 7	Valid	7	7
		Missing	2	1		Missing	0	0

External locus of control

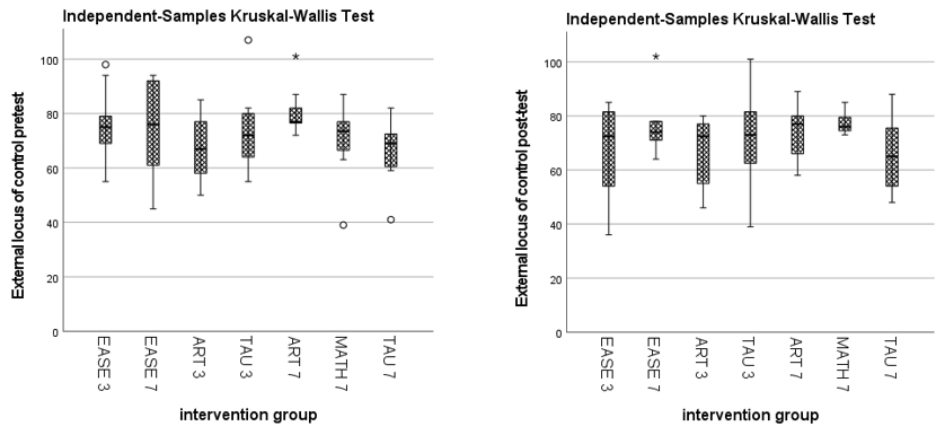
Method

A Kruskal-Wallis test showed in pre-test (N = 52) that there were statistically no significant differences in External locus of control between methods, $H(3) = 1.179, p = .758$. Similarly, there were no statistically significant difference in post-test (N = 45), $H(3) = 1.781, p = .619$.



Group

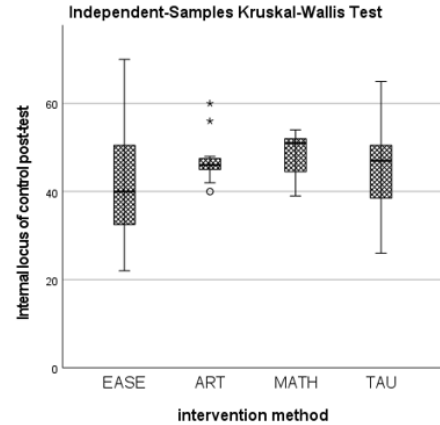
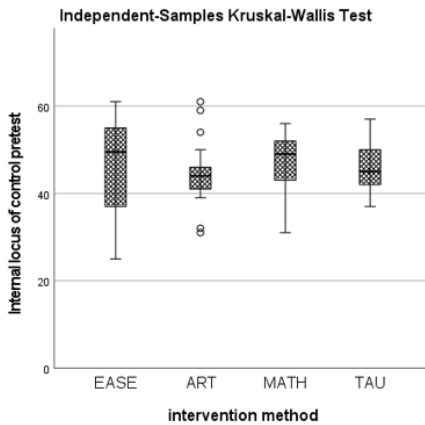
A Kruskal-Wallis test showed in pre-test (N = 52) that there were statistically significant differences in external locus of control between groups, $H(6) = 6.719, p = .348$. In addition, in post-test (N = 45) a Kruskal-Wallis test showed that there were statistically significant differences in empathic concern between groups, $H(6) = 3.483, p = .746$.



Internal locus of control

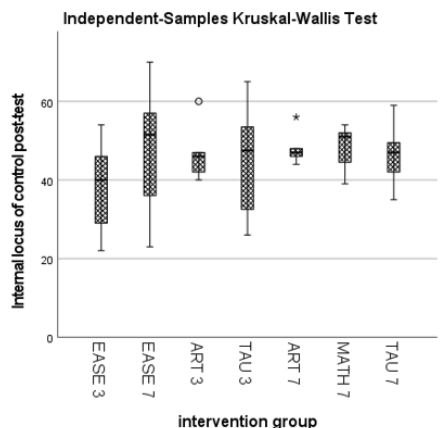
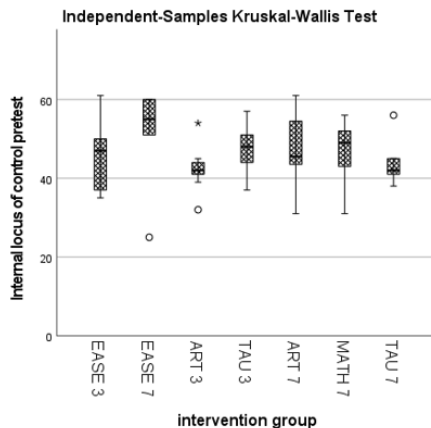
Method

A Kruskal-Wallis test showed that there were statistically significant differences in pre-test ($N = 54$) in internal locus of control between methods, $H(3) = 1.761$, $p = .624$. Similarly, in post-test ($N = 49$) there were no statistically significant differences between methods in internal locus of control, $H(3) = 2.411$, $p = .492$.



Group

A Kruskal-Wallis test showed in pre-test ($N = 54$) that there were statistically significant differences in empathic concern between groups, $H(6) = 6.808$, $p = .339$. In addition, in post-test ($N = 49$) a Kruskal-Wallis test showed that there were statistically significant differences in empathic concern between groups, $H(6) = 6.100$, $p = .412$.



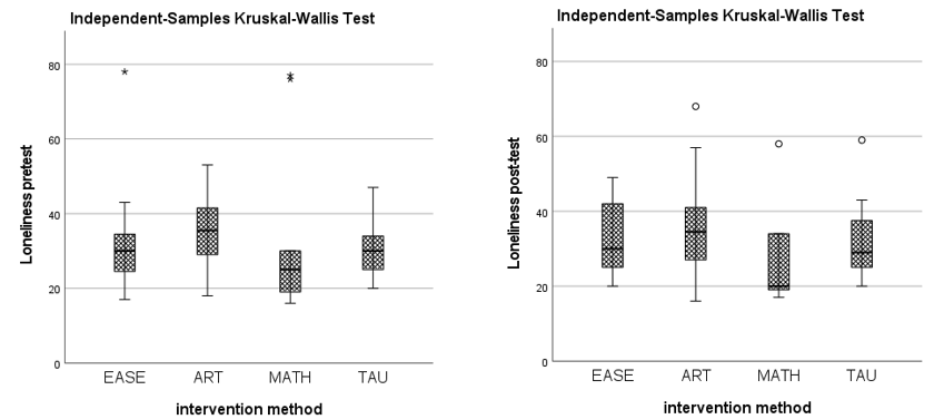
Loneliness

Frequencies of Loneliness instrument

Method	3 rd grade	N	pretest	post-test	7 th grade	N	pretest	post-test
EASE	EASE 3	Valid	7	9	EASE 7	Valid	8	8
		Missing	2	0		Missing	0	0
ART	ART 3	Valid	7	6	ART 7	Valid	9	8
		Missing	2	3		Missing	0	1
MATH	-	Valid			MATH 7	Valid	9	5
		Missing				Missing	0	4
TAU	TAU 3	Valid	9	9	TAU 7	Valid	4	6
		Missing	0	0		Missing	3	1

Method

A Kruskal-Wallis test showed that there were no statistically significant differences in pre-test (N = 53) in loneliness between methods, $H(3) = 3.621, p = .305$. Similarly, in post-test (N = 51) there were no statistically significant differences in loneliness, $H(3) = 1.606, p = .658$.



Group

A Kruskal-Wallis test showed in pre-test (N = 53) that there were statistically significant differences in loneliness between groups, $H(6) = 5.879, p = .437$. In addition, in post-test (N = 51) a Kruskal-Wallis test showed that there were no statistically significant differences in loneliness between groups, $H(6) = 2.373, p = .882$.

