

Elina Määttä

SETTING YOUNG CHILDREN UP FOR SUCCESS

*APPROACHING MOTIVATION THROUGH
CHILDREN'S PERCEPTIONS OF THEIR ABILITY*

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ELINA MÄÄTTÄ

**SETTING YOUNG CHILDREN UP
FOR SUCCESS**

Approaching motivation through children's perceptions
of their ability

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Abstract

This study focuses on motivational aspects of young children's self-regulated learning (SRL) in primary school. The purpose is to investigate children's personal experiences with success and their ability-related perceptions in order to understand whether children's beliefs of themselves as learners influence their academic functioning in school.

The dissertation consists of four empirical studies, which are reported in four articles. In *Study I*, the focus is on researchers' and children's self- and social perceptions of success. The aim is to identify how success can be recognized and promoted in the classroom context. *Study II* aims to identify young children's confidence and success in different efficacious interaction contexts. In *Study III*, the focus is on clarifying what kind of personal and contextual factors support children's perceived self-efficacy in social and independent learning situations. Finally, *Study IV* aims to identify the characteristics and triggers for efficacious interaction in terms of task involvement in collaborative small-group learning situations. The data collection methods include video observations, video clips, photos, video-stimulated recall and photo elicitation interviews, in addition to social competence tests administered to children and their teachers.

The results indicate that children's personal standards for success create the basis for their confidence and engagement in school. For them, success is finding the task or activity meaningful and doable, which in turn, creates positive emotions. These positive emotions are the basis for higher and more stable perceptions of ability in independent and social learning situations. In these different learning situations, children rely on their emotions, skills and previous experiences, as well as support and help from their teacher and peers. Children who seem to need the most support are either reluctant to seek or receive it from the teacher. Instead, their confidence is boosted through peer support. Therefore, the learning context, teachers and their pedagogical practices have important roles in supporting children's motivation and SRL.

Keywords: ability-related perceptions, participatory approach, perceived success, self-regulated learning, young children

Määttä, Elina, Alakoulun oppilaiden koulumenestyksen tukeminen. Oppimismotivaation tarkastelu lasten omakohtaisten onnistumiskokemusten ja pystyvyyskäsitteiden näkökulmasta

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Tiivistelmä

Tässä väitöskäsitteilyssä tutkitaan alakouluikäisten lasten itsesääntöistä oppimista motivationaalisisista lähtökohdista käsin. Tutkimuksen tavoitteena on selvittää lasten omakohtaisia onnistumiskokemuksia ja heidän pystyvyyskäsitteitään. Tarkoituksena on pyrkiä ymmärtämään kuinka lasten käsitykset itsestä oppijana vaikuttavat heidän toimimiseensa koulussa.

Tutkimus koostuu neljästä empiirisestä osatutkimuksesta, joiden tulokset on raportoitu neljässä artikkelissa. *Osatutkimuksessa I* tarkastelun kohteena ovat tutkijoiden ja lasten käsitykset onnistumisesta. *Osatutkimuksen II* tavoitteena on selvittää lasten pystyvyyttä ja onnistumista erilaisissa tehokkaissa vuorovaikutustilanteissa. *Osatutkimus III* syvennyy tarkemmin tarkastelemaan yksilö- ja ympäristötekijöitä, jotka tukevat lasten onnistumista ja pystyvyyttä sosiaalisissa ja itsenäisissä oppimistilanteissa. *Osatutkimuksessa IV* tavoitteena on tunnistaa mitä tehokas vuorovaikutus on ja mikä sitä saa aikaan etukäteen pedagogisesti suunnitelluissa yhteisöllisissä pienryhmätilanteissa. Tutkimusaineisto koostuu video-observaatioista, lyhyemmistä tietyin oppimistilanteen esittäivistä videotallenteista ja valokuvista joita käytettiin tukemaan ja syventämään lasten kanssa tehtyjä haastatteluita. Lisäksi lapsia ja opettajia pyydettiin arvioimaan lapsen sosiaalista kompetenssia.

Tutkimustulosten mukaan onnistuminen konkretisoituu lapsille mielekkäänä toimintana ja heidän tiedoillaan ja taidoillaan tehtävissä olevana tehtävänä. Onnistuminen johtaa positiivisiin tunteisiin ja käsityksiin omasta itsestä oppijana, jotka ovat perusta vakaammille pystyvyyskäsitteille ja toimintaan sitoutumiselle niin erilaisissa oppimistilanteissa. Lapset rakentavat pystyvyyskäsitteitään tunteiden, hallittujen taitojen ja aikaisempien kokemusten sekä opettajilta ja toisilta lapsilta saatavan tuen avulla. Yksi keskeisimmistä tutkimustuloksista on, että lapset jotka tarvitsevat tukea ovat joko haluttomia etsimään tai vastaanottamaan sitä opettajalta. Tällöin koetulla vertaisuudella on erityisen suuri merkitys heidän onnistumisen kokemuksissaan ja pystyvyyskäsitteiden rakentumisessa. Tutkimustulokset lisäävät ymmärrystä oppimisympäristön, opettajien ja heidän pedagogisten käytänteiden merkityksestä lasten motivaation ja itsesääntöisen oppimisen kehittämisessä ja tukemisessa.

Asiasanat: alakouluikäiset lapset, itsesääntöinen oppiminen, onnistumiskokemukset, osallistava lähestymistapa, pystyvyyskäsitteet

*To my teachers,
both past and present,
wherever you may be*

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Home in Maple Street
Vancouver, Canada
June, 2015

Elina Määttä

List of original articles

This doctoral thesis is based on the following original publications, which are referred to in the text by their Roman numerals (*Studies I–IV*):

- I Määttä E, Mykkänen A & Järvelä S (2015) Elementary school children's self- and social perceptions of success. *Journal of Research in Childhood Education*. In press.
- II Määttä E & Järvelä S (2013) Involving children in reflective discussions about their perceived self-efficacy and learning experiences. *International Journal of Early Years Education* 21(4): 309–324.
- III Määttä E, Järvelä S & Perry N (2015) Personal and contextual contributors to young children's activity-based perceived self-efficacy. *Scandinavian Journal of Educational Research*. Published online. URI: <http://dx.doi.org/10.1080/00313831.2015.1024161>.
- IV Määttä E, Järvenoja H & Järvelä S (2012) Triggers of students' efficacious interaction in collaborative learning situations. *Small Group Research* 43(4): 497–522.

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1 Introduction

Young children are naturally curious and intrinsically interested in the world around them. It is a common observation that children appear to learn very effectively before anyone tries to teach them anything (Dean 2006, Whitebread 2012). Children learn from everything they do and experience. When their explorations are successful, they want learn more and are motivated to explore further (Branscombe *et al.* 2013). For that reason, this dissertation argues that successful learning experiences are the foundation of a child's motivation to learn. However, the foundation of successful learning experiences requires adequate learning skills and the will to use these skills. Self-regulated learning (SRL) involves both skills and the will to learn in ways that are oriented toward academic success (Zimmerman 2002). SRL leads to outcomes that allow people to thrive and increase their competence in the face of difficulties and challenges. It is also associated with the "21st century learning skills" such as collaboration, critical thinking and problem-solving, all widely recognized as being necessary for success in the modern era (Wolters 2010).

Based on the evidence emerging from both developmental and educational psychology, it is now clear that young children are more capable of regulating their learning and evaluating their abilities than previously thought (Bronson 2000, Perry 2013, Schneider & Lockl 2002, Whitebread 2012). Previous research has concluded that self-regulation makes the difference between academic success and failure for many learners, especially in primary education (Dignath & Büttner 2008, Morrison *et al.* 2010, Rimm-Kaufman *et al.* 2009). However, to empower children to take ownership of their own learning, SRL must be explicitly taught, intensively practiced, and extensively supported (Kramarski *et al.* 2013, Perry 2013). Therefore, children's ability to actively engage in learning – such as attending to key features of the learning environment and responding appropriately, adaptively, and flexibly to emerging challenges, resisting distractions, and persisting when tasks are difficult – are critical competencies that should be a central and explicit focus of primary education.

Before entering school, children learn through their own explorations of the contents that are meaningful for them. However, in school children do not only have much to learn, but they also have to remember and understand the content that has (usually) been chosen by the teacher. Although schools provide children with support and resources regarding their metacognitive development and strategic skills, unfortunately too often the activities in school fail to motivate

children to take part in the activity. During the first years of primary education, children form attitudes and perceptions about learning and of themselves as learners that last for a lifetime (Paris & Newman 1990). This assumption can have significant implications in school, because these attitudes and perceptions can be powerful drivers of successful behaviors and performance (Ajzen & Fishbein 2005). It does not matter what the facts of the matter being learnt are, what is important are what and how children perceive the situation to be. However, in many instances, educators and parents tend to reflect on young children's successes and failures from their own perspectives, forgetting that children themselves might attribute to their successes or failures in an entirely different manner (Määttä & Järvelä 2013, Pajares & Schunk 2001). Consequently, little is known about how young children evaluate their own learning, despite the fact that this ability is critical for effective learning and SRL.

Many children start school filled with great expectations and ambitions. From the start, children view school with a collage of beliefs, ideas and conceptions which will become important parts of their academic self-perceptions related to schooling. At the core of these beliefs are the ways children view their own abilities and motivation to learn (Chapman & Tunmer 2003, Paris & Newman 1990). Since school experiences constitute a major portion of children's lives, in this dissertation, children's own views are regarded as a highly valuable source of information regarding the beliefs in their abilities and motivation for learning. Self-beliefs have received a great deal of attention in educational and psychological research and there are numerous studies demonstrating that children who exhibit different self-beliefs demonstrate different levels of social, emotional, and cognitive engagement in school (Pajares & Schunk 2001, Wigfield & Eccles 2000). For example, learners with high self-beliefs are typically highly motivated and engaged in learning, which promotes their overall competence as learners. Unfortunately, learners with low self-beliefs tend to believe they cannot be successful and thus are less motivated and less likely to engage in learning.

Accordingly, self-beliefs have been approached from various perspectives including attribution theory (Weiner 2000), competence (Harter 1999), mindsets (Dweck 2000, 2006), self-worth (Covington 2009), self-concept (Hattie 1992), and self-efficacy (Bandura 1997, 2001). These self-belief constructs are related to each other, but there are some theoretical and conceptual differences between them. The focus of this dissertation, however, is on children's ability-related perceptions, which is used as an umbrella term for competence, self-efficacy and mindset. Ability-related perceptions are learners' self-evaluations of their ability,

perceptions of success and their beliefs that they can perform a task (Pintrich & de Groot 1990, Simpson *et al.* 1996), which play an important role in SRL because they lead to specific behaviors that can either encourage or discourage effective performance. Zimmerman (2013) proposes that these kinds of ability-related beliefs function as a motive for self-initiated and self-sustained learning and performance.

Since the studies reported in this dissertation have been conducted in Finnish primary school classrooms, the main characteristics of the Finnish educational system and the acquisition of reading and writing skills of Finnish children are presented briefly. Comprehensive school in Finland is a nine-year compulsory educational program starting at age seven and ending at the age of fifteen. The first six years form Finnish elementary school from which Grades 1 and 2 (and pre-primary school) are referred to as primary education in this dissertation. The following three years make up the lower secondary school (or middle school). Before elementary school, day care centers and some schools provide an optional preprimary school program for 6-year-olds which is a one-year-long half-day program focusing on guaranteeing equal opportunities for all children to start and learn in elementary school. The pre-primary school and elementary school are obligated to implement a national curriculum specified by the Finnish National Board of Education. What is unique in the Finnish educational system is that students are not selected, tracked, or streamed during their nine-year basic education (Finnish National Board of Education 2013). Broadly one third of Finnish children naturally acquire reading skills before entering school (Lyytinen *et al.* 2005, Silven *et al.* 2004). Half of the children know all the Finnish letters and one fourth have achieved almost perfect decoding accuracy of syllables and pseudo words when entering school (Holopainen *et al.* 2000). Before entering school, over 90% of the children attend pre-primary school where letters and words are informally introduced (Finnish National Board of Education 2013). Formal reading and writing instruction begins at the age of seven when children start primary education and attend first grade in comprehensive school (Lyytinen *et al.* 2005).

Just as not all children achieve the same levels of ability in other aspects of their development, there are many individual differences in their development of SRL. Many children struggle with self-regulation which affects their adjustment to and early success in school (Rimm-Kaufman & Chiu 2007). These individual differences in self-regulation and SRL underline the necessity to investigate motivational components of SRL and the role of different contexts in activating

them. Furthermore, the ways children view and define success is important in order to understand children's learning goals, effective academic functioning and SRL in primary education classrooms. Still, existing research has not investigated young children's motivation extensively enough or the importance of learning contexts for motivation in primary education. It also remains unclear what the most effective means are for promoting young children's motivation and effective learning in this age group. This dissertation aims to address these gaps. Thus the purpose of this dissertation is to explore children's personal experiences with success and their ability-related perceptions in order to understand whether children's beliefs of themselves as learners influence their academic functioning and perceived success in school.

2 Theoretical and methodological framework

The theoretical framework of this dissertation is based on Zimmerman's social cognitive model of self-regulatory competence (Zimmerman 2002), as well as his triadic analysis of SRL (Zimmerman 1989), and Bandura's (1977, 1997) social cognitive theory, which together explain the role of motivation within SRL more explicitly. This chapter discusses research into young children's – preschool, kindergarten, and grades 1 to 6 –motivational aspects of SRL by reviewing previous studies on self-regulation, SRL and ability-related perceptions such as competence, self-efficacy and mindsets. These constructs share key components that predict children's academic performance and school success. Although different lines of research have separately targeted investigations of SRL (Perry 2013, Weinstein *et al.* 2000, Winne & Hadwin 1998, Zimmerman 2013), and ability-related perceptions (Bandura 1986, 1993, 1997, Dweck 2000, 2006, Madigan *et al.* 2002), it is also widely acknowledged that these constructs are highly related and complementary (Gaskill & Woolfolk Hoy 2002, Job *et al.* 2015, Usher & Pajares 2008, Zimmerman 2002).

2.1 What is self-regulated learning?

SRL is a self-management process in which learners activate, take control of and evaluate their own learning (Zimmerman 2002). To better understand this process, imagine a ten year old child, Lassi, planning his first biking trip. Before the biking trip, he has to decide, for example, where to go to, which road to choose, and how fast he can bike. He must also gather information about the route and destination, map out the route and make any required preparations. During the biking trip, he needs to consider whether he should take a break and when to check the road map to make sure that he is still on the right track. Also, he needs to be aware of the environment in order to check out things he comes across while he is biking. In fact, while doing all this he is engaging in many SRL processes. In the classroom context learners need to determine what they are being asked to do and what they want to learn (where to go); find out what is needed for to accomplish these goals (gather information); develop a plan on how to tackle a learning task (map out a route); determine the working tempo (how fast); decide how to learn (choose the road); control progress (make sure of being on the right track); and make adjustments until the desired results are attained (reaching the destination). To conclude, SRL describes learners' academically effective

approaches to learning involving metacognition (Annevirta & Vauras 2006, Whitebread 2012), motivation and emotions (Hornstra *et al.* 2013, Measelle *et al.* 1998), as well as strategic action (Malmberg *et al.* 2014, Winne *et al.* 2002).

Metacognition means self-awareness and involves a set of highly flexible cognitive abilities that enable learners to engage and monitor reflective and analytical forms of thinking (Schraw *et al.* 2006, Whitebread *et al.* 2007). Metacognition is reflected in learners' awareness of themselves as learners, and factors influencing their performance (*e.g.* making realistic evaluations of their performance on a task) and their understanding of how to control and manage their learning (*e.g.* making realistic judgments about the time it will take to complete a task, or using different kinds of strategies to complete tasks independently). Learners apply this knowledge to solve problems and to cope with and meet the demands of challenging tasks and events (Bryce & Whitebread 2012, Sperling *et al.* 2004).

Motivation to learn means having the willingness to try and involves self-efficacy (Bandura 1997), task interest and value (Wigfield & Eccles 1992, 2000), goal setting (Missiuna & Pollock 2000), as well as attributions and self-evaluations (Heyman *et al.* 2003) that influence learning performance. It is reflected in learners' personal goals for learning (*e.g.* their enjoyment of learning new things), their self-efficacy for approaching tasks (*e.g.* the willingness to try challenging tasks or persistence in the face of difficulties), and adaptive attributions linking success and failure to controllable factors (*e.g.* using different types of strategies effectively). These motivational processes thus not only include evaluations but also preparations for action.

Strategic action is the external enactment of one's metacognition and motivation (Winne & Perry 2000, Winne *et al.* 2002). It is reflected in the ways learners approach challenging tasks, choose strategies while solving a problem, and apply them appropriately (*e.g.* seeking help when facing a challenge or choosing a quiet space to work in if other children are talking) (Perry *et al.* 2004, Perry & VandeKamp 2000). In other words, strategic action requires knowing strategies and knowing when, where, and how to use them effectively and efficiently. Strategic action has three cyclical phases corresponding to before, during, and after the learning takes place. Before the activity, learners analyze the task through goal setting and strategic planning specific to the task (Butler 2002, Cleary & Zimmerman 2012, Zimmerman 2002, 2008). Efficacious learners seek to identify the essential requirements of a learning task, set goals related to either

the outcome or the process, and develop learning plans to achieve their goals (Cleary & Zimmerman 2012, Zimmerman 2000, 2002).

During the activity, learners direct their attention to use and monitor specific strategies and tactics while working with a task. This requires two types of processes: controlling and monitoring. Controlling refers to employing the task-specific strategies which the learner identified before the activity. For example, while solving a problem, efficacious learners utilize processes such as self-instruction and attention-focusing to optimize their focus on the task as well as their effort and persistence (Zimmerman 2000, 2013). Monitoring means tracking different aspects of the performance such as the time spent studying a certain subject and the conditions surrounding it. Efficacious learners have a repertoire of strategies which they appropriately apply to tackle the challenges learning may present. For example, a learner who is struggling during a writing activity may benefit from cognitively tracking the specific steps of a writing strategy (Cleary & Zimmerman 2012).

Finally, after the performance, learners use internal or external feedback to reflect the effectiveness of their strategies. This evaluation takes place after the activity wherein a learner compares their own performance to the performance of others or a specific standard and decides causal attributions for the performance (Zimmerman 2000, 2002). This process is important because it determines whether the learners perceive their own learning efforts in favorable or unfavorable terms (Cleary & Zimmerman 2012). Efficacious learners attribute their success and failure to the strategies they utilized during the activity and seek to make adjustments to their learning tactics and strategies in order to improve their future performances (Schunk 2001). These three cyclical phases are interdependent, which means that changes in the task analysis processes have an impact on performance control, which in turn influences the evaluation processes (Cleary & Zimmerman 2012).

In sum, self-regulated learners metacognitively plan, organize, self-instruct, self-monitor, and self-evaluate their learning before, during and after the learning takes place. Motivationally, they perceive themselves as competent, efficacious, and autonomous. Behaviorally, for example, they select and structure their environments for optimal learning.

2.1.1 The development of self-regulated learning in young children

Primary school years are a critical developmental period for fostering the skills and will for learning and successful academic functioning (Dignath & Büttner 2008, Rimm-Kaufman *et al.* 2009). There are many individual differences in children's development of SRL. For example, previous research has showed that half of children entering kindergarten lack basic self-regulatory skills such as following directions and working independently (Rimm-Kaufman *et al.* 2000). These individual differences seem to appear well before children begin formal schooling (Bronson 2000, Duckworth & Carlson 2013) and can have long lasting effects in shaping children's academic trajectories.

The development of SRL is influenced not only by personal factors (such as cognitive skills and biological development), but also social-contextual factors (such as positive adult-child relationships, authoritative autonomy supporting parenting and teaching styles, and effective co-regulation) (Zimmerman 2013). Zimmerman (2000) proposed that there are four levels on a social cognitive path to self-regulation – with the first two levels being social and the last two being more personal. First, learners must discriminate a skill from a proficient model's performance over multiple observations (*observational level*). At this point learners are often motivated by positive vicarious reinforcements of the model. At the next level, learners duplicate the model's response to a corresponding task with some form of social assistance (*emulation level*). Learners improve more when guidance, constructive feedback, and reinforcement are provided. Next, learners practice the skill in structured settings without models (*self-control level*), using a mental recollection of the model. The learners' self-reinforcement is contingent upon their success in matching a standard during practice, which is highly motivating. Finally, learners practice the skill in unstructured settings involving varied contexts and dynamic interpersonal interactions (*self-regulated level*) (Berhenke 2013, Zimmerman 2013). SRL develops from social to self-initiated as a result of the learners' learning and motivation. Especially with young children, self-evaluation plays a central role in this development process (Bandura 1997). Children learn about which behaviors are rewarded or punished in the environment through action, observing the actions of others and evaluating the effects of these actions. These evaluations lead to the development of expectations for the outcomes of future behaviors and the establishment of internal criteria for judging the adequacy of the behaviors. Children then use these

criteria to evaluate and regulate their own behavior and evaluate their effectiveness.

When reviewing the literature and previous SRL studies, it seems that there are differences in how SRL have been approached among younger and older learners. SRL research among older learners has been focused on specific monitoring, controlling and evaluation strategies and approaches being used during learning. This approach reflects the tradition that has been used and defined in this dissertation. Research among younger children, on the other hand, has focused on the cognitive skills and behavioral regulation which have typically been conceptualized as executive functions including, for example, flexible attention, working memory, inhibitory control, and self-control (McClelland & Cameron 2011, McClelland *et al.* 2000). However, there is a connection between these research approaches. For example, while studies on older learners' SRL focus on specific strategies for self-observation (such as self-recording a behavior), a study into younger children's SRL might focus on executive functions such as attentional control, which is a skill that is necessary for any form of self-observation. It seems that executive functions are necessary for using SRL strategies and therefore play an important role in the acquisition of SRL skills.

2.1.2 Self-regulated learning is the key for young children's school success

First and foremost, SRL in primary education classrooms involves the ability to resist distractions (*e.g.* focusing on the teacher's instruction despite the fact that friends are asking the learner to participate in their discussion), control impulses (*e.g.* resisting the immediate tendency to blurt out the answer when the teacher poses a question to the whole class) and the capacity to do something even if it is undesirable (*e.g.* raising one's hand and waiting in turn). Delaying gratification and suppressing immediate impulses enough to think ahead to the possible consequences of own actions or considering alternative actions that would be more appropriate are important for young children's effective functioning and success in school.

Findings of previous studies have consistently indicated that learners who engage in effective and adaptive self-regulation experience favorable developmental and educational outcomes, including higher levels of engagement (Williford *et al.* 2013), confidence (Määttä & Järvelä 2013), self-control

(McClelland *et al.* 2000), and academic achievement (McClelland & Cameron 2011, Pintrich & de Groot 1990). In fact, self-regulation has been proved to predict children's success in school more powerfully than IQ tests or knowledge of math and reading on entry to school (Blair & Razza 2007, Diamond *et al.* 2007, Howse *et al.* 2003). In other words, SRL skills can be considered as the most important competency for school readiness. In contrast, learners who engage in poor and ineffective self-regulation experience unfavorable developmental and educational outcomes and are at greater risk of a variety of school difficulties (McClelland *et al.* 2000) such as low self-efficacy, poor interpersonal relationships, and a lack of motivation for learning (Hill *et al.* 2006, Mueller & Dweck 1998). Findings have indicated, for example, that these children tend to have problems adjusting to school and performing academically (McClelland *et al.* 2000, Pianta & Stuhlman 2004, Rimm-Kaufman *et al.* 2002). In other words, a lack of SRL can have a great impact on how well children do in school.

To conclude, during primary school years SRL is needed to engage in mindful, intentional, and thoughtful learning behaviors. Effective self-regulation, by which children control their thoughts, feelings, and behaviors, is essential for adaptive functioning in the classroom. Although learning skills are very important for effective learning and SRL, the will to learn and use those skills are even more important. Therefore, efforts to understand and improve the effective functioning and academic outcomes of young children have increasingly focused on their learning motivation.

2.2 The role of motivation in self-regulated learning

SRL is not the same as motivation but motivation is the key to successful SRL (Wolters 2003). Motivation is a process that initiates, guides and maintains goal-oriented behavior. It explains behavior and the desire to do something, for example the willingness to attempt difficult tasks or to persist when faced with difficulties. SRL requires some degree of choice or intentional selection of strategies which will help the learner to achieve a desired goal or behavior (Perry 1998, 2013). In motivation, however, more central components tend to be the learner's beliefs, perceptions and attributions. In this dissertation, motivation has been defined through learners' self-evaluations of their ability, their perceptions of success and their beliefs that they are able to perform the task (Pintrich & de Groot 1990, Simpson *et al.* 1996). These ability-related perceptions have been

conceptualized in *Studies I-IV* with views of competence, self-efficacy and mindsets.

2.2.1 Conceptualizing motivation: Focusing on ability-related perceptions

In previous literature, competence and self-efficacy are constructs used to investigate and understand ability-related perceptions. Competence refers to perceptions of ability in broad academic areas, such as how good a learner is in general or in subject areas as a whole. Competence is an assessment of ability and perceptions of success that generalizes across a domain and does not include beliefs (Harter 1981, Madigan *et al.* 2002). Self-efficacy is a more specific ability-related judgment. It refers to beliefs of being capable of performing effectively and succeeding in a specific domain or task (Bandura 1986, 1993, 1997). It is important to note that self-efficacy is not an ability or a perceived skill as such, but rather an ‘I-think-I-can’ belief about what a learner can do and accomplish with his skills under certain conditions (Bandura 1993, Maddux 2002). Previous research has distinctively shown that self-efficacy differs between domains, situations, and tasks (Bandura 1997, Määttä *et al.* 2015a). For example, learners may feel more confident in one particular area (*e.g.* mathematics) than they are in another area (*e.g.* reading). This is because the skills they need to do well in various content areas differ. Reading self-efficacy involves confidence in language and comprehension skills, whereas mathematics self-efficacy involves confidence in one’s numeric skills (Wigfield *et al.* 2004).

In addition to these more traditional ways of conceptualizing perceptions of ability, the construct of a mindset is used to deepen the understanding of ability-related perceptions. Mindset refers to a set of beliefs or a way of thinking that influences a learner’s confidence, motivation, attitude and behavior (Dweck 2000, Kinlaw & Kurtz-Costes 2007, Mueller & Dweck 1998). According to this line of research, there are two significant types of mindsets: fixed and growth. Learners with a fixed mindset believe that each person has just a certain amount of intelligence which is unchangeable and restricts their ability to learn. Previous learning experiences have a great influence on these performance oriented learners and their ability-related perceptions, which they tend to form based on learning outcomes of success or failure. These learners are particularly vulnerable to decreased performance when they realize they are at risk of failing (Dweck 2000, 2006). Learners with a growth mindset, on the other hand, believe that their

abilities can be developed, and so their major goal is to learn and improve. They believe that no matter what your ability is, effort is what ignites that ability and turns it into achievement (Dweck 2006, Mueller & Dweck 1998).

2.2.2 The power of ability-related perceptions to predict young children's school success

Previous research has extensively shown that ability-related perceptions influence several aspects of behavior that are important for learning and school success. Research has consistently demonstrated that a higher sense of self-efficacy can positively affect learning, achievement, self-regulation, and motivational outcomes such as learners' choice of activity, effort, and persistence (Schunk & Pajares 2009, Schunk & Zimmerman 2008, Usher & Pajares 2008, Zimmerman & Kitsantas 2005). Learners with high self-efficacy are motivated and engaged in learning, which promotes their overall competence as learners. Self-efficacy predicts the types and quality of learning goals and strategies, as well as the choice of strategies that learners select prior to learning (Bandura *et al.* 1996, Cleary & Zimmerman 2012). Further, learners with high self-efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated (Bandura 1997, Zimmerman 2000, Zimmerman & Kitsantas 2005). These learners will put forth a high degree of effort in order to meet their commitments and expectations (Schunk & Zimmerman 1997, Wigfield *et al.* 2004). They attribute failure to things that are within their control, such as effort or strategy use, rather than blaming external factors (Bandura 1997, Cleary & Zimmerman 2012, Zimmerman & Bandura 1994). Conversely, a lower sense of self-efficacy for learning and performing well in school can negatively affect learners' motivation and engagement (Pajares 1996, Schunk & Mullen 2012). Learners with low self-efficacy believe they cannot be successful and thus are less likely to make a concerted, extended effort and may consider challenging tasks as threats that are to be avoided (Bandura 1993, 1997, Zimmerman 2000).

In line with these studies, research into mindsets has provided valuable information about how very differently learners perceive success and approach learning depending on their mindset. Research has shown, for example, that learners' mindsets have a direct influence on their grades and that a growth supporting mindset raises learners' grades and achievement test scores significantly (Blackwell *et al.* 2007, Good *et al.* 2003). For learners with fixed mindsets, success is typically measured by grades or scores on standardized tests

and exams which assess the extent to which a learner has achieved his goals. These learners worry more about looking smart and not making mistakes. They believe that needing to make an effort to learn means that their intelligence is deficient. They feel discouraged or defensive in the face of setbacks because they believe that setbacks reflect limitations in their intelligence (Dweck 2006). For learners with growth mindsets, success is doing their best, focusing on learning and improving and being resilient and persistent in the face of setbacks (Dweck 2000, 2006).

To conclude, if learners believe that they are or can become capable enough to succeed with a task or an activity, they will be more willing to try and persist in the face of challenges. Further, as previous research has indicated, sustaining in the activity and being productively engaged with the task will lead to experiences with success.

2.3 The development of self-regulatory competence

Social cognitive theory views human functioning as a product of a dynamic interplay between personal, behavioral and environmental processes and influences (Bandura 1986, Pajares & Usher 2008, Zimmerman 1989). Personal processes refer to covert forms of self-regulation which means observing and adapting specific feelings and thoughts. These processes include metacognition, motivation and emotions (Zimmerman 2013). Metacognition refers to people's awareness of themselves as learners and factors influencing their performance, as well as their understanding of how to control and manage their learning (Schraw *et al.* 2006, Sperling *et al.* 2004, Whitebread *et al.* 2008). This metacognitive knowledge shapes learner's motivation and emotions which are reflected in personal goals for learning (Missiuna & Pollock 2000, Schunk & Swartz 1993), perceptions about ability (Määttä *et al.* 2015a), willingness to approach learning (Kinlaw & Kurtz-Costes 2007), and expectations for success (Liew *et al.* 2008, Määttä *et al.* 2015b).

Instead of operating independently, these personal processes also interact with environmental and behavioral processes in a reciprocal fashion as the learner engages in the learning task (Bandura 1986, 2001)

. The behavioral processes refer to monitoring one's performance and adapting it strategically. This kind of strategic action involves processes such as choosing from a repertoire of strategies those best suited to the learning situation and applying the strategies effectively and efficiently to achieve academic goals

(Perry *et al.* 2004, Perry & VandeKamp 2000, Winne *et al.* 2002). Strategic action transforms learners' pre-existing abilities into task-related behavior in diverse areas of functioning (Zimmerman 2013). The environmental processes involve monitoring the effects of varying conditions and controlling those conditions strategically (Bandura 1997, Zimmerman 2013).

Applying this model, the theoretical framework of this this dissertation is built around the interplay between personal, behavioral and environmental influences (Fig. 1. Summary of the theoretical framework: Interplay between motivation, performance, and environment). Motivation is a critical component of SRL because learning is not only about skills but ultimately about the will to use these skills (Zimmerman 2002). Even children with high degrees of skills and abilities do sometimes achieve poorly during specific learning activities while performing up to standard in others. When children struggle with their schoolwork, motivation determines whether they give up or embrace the challenge and persist to overcome it. In this dissertation, ability-related perceptions were seen as key drivers of motivation for SRL (Chapman & Tunmer 1997). These perceptions fuel desires and intentions, establish goals prospectively and offer attributions retrospectively. They are enduring beliefs that become motives for performance because learners have an intrinsic need to organize and explain their own behavior (Paris & Newman 1990).

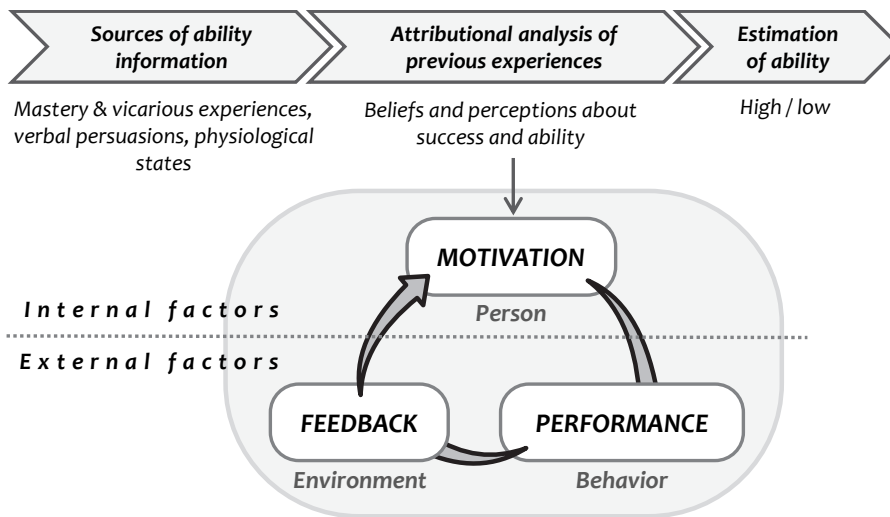


Fig. 1. Summary of the theoretical framework: Interplay between motivation, performance, and environment.

Previous research of self-efficacy beliefs has identified four main sources that activate and influence ability-related beliefs. These are mastery experiences, emotional and physiological states, vicarious experiences, and verbal and social persuasions (Bandura 1997, Pajares & Usher 2008). Mastery experiences reflect learners’ interpretations of their previous learning experiences (Määttä *et al.* 2012, Määttä *et al.* 2015a). Actions that learners perceive as successes typically raise their perceptions, whereas actions perceived as failures can lower these perceptions (Bandura 1997, Joët *et al.* 2011). Likewise, emotional and physiological states, such as anxiety, stress and mood can affect judgments of personal efficacy (Maddux 2002, Pajares 1996). In this case, learners assess their level of confidence by interpreting their emotional reactions to certain situations (Määttä *et al.* 2015a, Usher 2008). For instance, if learners with low ability-related perceptions get butterflies in the stomach or sweaty palms before presenting in front of teachers and classmates, they might interpret it as a sign of their own inability. This could eventually further decrease their ability-related perceptions. However, learners with high ability-related perceptions are more likely to interpret such physiological signs as normal and unrelated to their actual ability. Vicarious experiences come from observing the actions of others, such as

peers or teachers (Bandura 1997). Seeing a peer succeed at a challenging task can convince a learner that he also has the ability to succeed. Such social models play a particularly important role in the development of positive self-efficacy beliefs when learners have doubts about their own skills or abilities (Joët *et al.* 2011). At the same time, social persuasions and evaluative feedback from parents, teachers, and peers can influence learners' confidence in their ability to succeed (Määttä *et al.* 2015a). When especially young learners are not yet skilled at making accurate self-appraisals, they often eagerly await evaluative feedback about their performance from trusted individuals (Bandura 1997). In such cases, feedback that is catered to young learners' skills development can be particularly helpful in building their ability-related perceptions (Hattie & Timperley 2007, Joët *et al.* 2011). Likewise, disparaging comments can lower learners' sense of efficacy and ability-related perceptions, which will have consequences regarding their motivation (Pajares & Usher 2008).

To better understand the interplay between person, behavior and environment, imagine a literature class where children have prepared a short story and are reading their story to others. A first-grader Luukas is receiving positive feedback from his teacher after reading aloud fluently. This positive reinforcement motivates him to remain engaged in the lesson (*feedback* → *performance*). He attributes his successful performance to the effort he made with his homework reading 10 minutes every evening (*performance* → *motivation*). Luukas feels successful, perceives his ability to read aloud strongly and feels confident that he can do it again in the future (*motivation* → *performance*). When another first-grader, Emma, receives constructive feedback from her peer after she stumbles over words that her peers read with ease, she decides that she is not a good reader (*feedback* → *motivation*). She does not feel successful, perceives her ability to read aloud as being low, which makes her become disengaged in whole-class literacy lessons (*motivation* → *performance*). To support her development, the teacher teams Emma with Luukas during small-group literacy activities. After working with Luukas and other peers Emma begins to realize that she is not as bad a reader as she has thought she was. As her skills grow, so does her confidence in those skills and her attitude towards literacy (*environment* → *motivation*). As a result, Emma wants to take part to the reading aloud activities and feels confident that she can do it successfully (*motivation* → *performance*) (Bandura 1986, Pajares & Usher 2008). To conclude, motivation is important for the action, and feedback will have a strong effect on motivation.

So how is this interplay between motivation, performance and feedback connected to SRL? Learners who are motivated to participate in an activity will engage in self-regulatory activities that they feel will help them to succeed with the activity. Self-regulation promotes learning, which leads to perceptions of greater competence and ability, which in turn sustains motivation toward the task and toward future activities (Berhenke 2013). As described above, each factor can interact in different ways to produce both positive and negative outcomes. A positive outcome requires the learner to monitor his ongoing learning behavior and control the learning environment to ensure that they are not discrepant from his perceptions. Typically this requires that the learner is willing to make the necessary strategic adjustments to improve the task performance (Cleary & Zimmerman 2012). Feedback from these processes enables self-regulated learners to adapt to changes in their social and physical environments, behavioral outcomes, and covert thoughts and feelings. Although behavior can be initiated from the environment, for example through instruction, it cannot be regarded as self-regulated unless it is initiated by personal processes (Pajares & Usher 2008, Zimmerman 2002).

In summary, to become an efficacious learner requires a willingness to take responsibility for one's own learning and proper skills to regulate the learning process. However, having these skills or knowing self-regulatory strategies is not enough to ensure their effective use. Children must also possess the belief that they can use them effectively (Usher & Pajares 2007, Zimmerman 2002). Given the central role played by the beliefs and perceptions of competence and ability as determinants of academic achievement, even a learner with the strongest cognitive skills may not spend much time learning if he is not motivated to do so (Bandura 2006). In other words, self-regulation depends on learners feeling efficacious about performing well. Considering the literature and studies on SRL, SE and mindsets reviewed in previous chapter, it is clear that success in the classroom is not simply based on how capable children are, but also and more importantly how capable they *believe* they are and can become.

2.4 Issues in investigating young children's self-regulated learning and their ability-related perceptions

Until relatively recently, the focus of the research has been on researching children, rather than involving them in the research. In this dissertation, children are not seen only as objects to be studied but and more importantly as experts on

their own lives and experiences. The literature provides numerous methods and approaches that have been used to investigate SRL and ability-related perceptions with older learners but is much more limited in describing and testing the use of these methods with children. Recognizing the complexity of collecting information from young children, this dissertation conducts an in-depth analysis of self-report measures and situational methods in order to describe a methodological framework for this dissertation.

2.4.1 Young children's capability to assess their learning abilities

Research findings about young children's capabilities to assess their learning, motivational beliefs and ability-related perceptions are mixed, indicating that children can either correctly assess or tend to overestimate their abilities. Some studies have found that young children either overestimate their abilities or are not capable of regulating and assessing their learning and competence in a sophisticated fashion (Cain & Dweck 1995, Madigan *et al.* 2002, Paris & Newman 1990). Children construct implicit beliefs about their abilities, expectations of success, the usefulness and availability of cognitive strategies, as well as about the social dispositions of other people in the classroom (Paris & Newman 1990). For example, previous research has suggested that children younger than 10 years of age have difficulty coordinating the metacognitive processes required to complete complex, multifaceted tasks (Pintrich & Zusho 2001, Winne 1997, Zimmerman 1990). Further, it has been suggested that young children sometimes focus on the wrong criteria of ability, for example confusing perceptions of ability with appropriate social behavior (Paris & Newman 1990). In their review of research on perceived competence, Stipek and MacIver (1989) found that young children tended to rate their academic competence highly and globally. This finding was confirmed later in Madigan and her colleagues' (2002) study where they found that preschoolers were not consistently able to report on their level of confidence. They proposed that motivation lacks stability between early and middle childhood. Accordingly, these studies have proposed that children's perceptions of ability and competence are higher during early childhood and tend to steadily decrease from kindergarten through to fourth grade (Harter 1999, Madigan *et al.* 2002). To conclude, children's ability to reflect on their abilities and to articulate them more accurately improves with age. But even when their perceptions and beliefs are implicit and imprecise, they mediate children's self-regulated learning (Paris & Newman 1990).

Recent research, however, challenges these assumptions and findings by proposing that young children are able to regulate their learning behavior, understand the process of self-evaluation, and may fairly judge their own competence (Bassett *et al.* 2012, Tirosh *et al.* 2012, Whitebread *et al.* 2008, Whitebread *et al.* 2007, Wilson & Trainin 2007). For example, several studies have demonstrated that young children demonstrate metacognition, motivation for learning, and strategic action to regulate their learning in classrooms. Specifically, Perry and her colleagues (1998, 2000) provided evidence that children from kindergarten through to third grade were regulating their behavior during complex and multifaceted tasks. Wilson and Trainin (2007) found that children as young as first-graders were able to differentiate between their self-efficacy for reading, writing, and spelling. Based on their study, Tirosh and her colleagues (2012) proposed that children in kindergarten are starting to form accurate self-efficacy beliefs and are aware of the differences in their ability to perform different tasks. Accordingly, previous studies presented by Marsh and his colleagues (1991), Chapman and Tunmer (1995, 1997, 2003), and Valeski and Stipek (2001) support this view by providing evidence of young children's ability to make domain-specific self-judgments. Certainly, the ways children's perspectives and capabilities are approached will greatly influence the kinds of results obtained.

2.4.2 Using self-report measures: Children as informants

Research methods that take the approach of asking the person directly are known as self-report methods. These measures are typically employed either before or after a task or learning activity. The majority of the reviewed studies employed self-report methods and took the form of questionnaires (Blair & Razza 2007, Caprara *et al.* 2011, Liew *et al.* 2008), structured or semi-structured interviews (Perry 1998, Perry & VandeKamp 2000), and rating scales (Madigan *et al.* 2002, Rimm-Kaufman *et al.* 2009).

In SRL studies, questionnaires (*e.g.* The Motivated Strategies for Learning Questionnaire) have provided important information on what kinds of SRL strategies successful learners use. These questionnaires usually ask learners to generalize across learning experiences and use Likert type scales to assess the frequency of learners' reported strategy use ranging from 'totally not applicable to me' to 'totally applicable to me' (Hornstra *et al.* 2013). In studies of ability-related perceptions, questionnaires elicit learners' confidence that they can perform a specific set of tasks or set of tasks by asking them, for example, "How

confident are you that you can perform the reading task?” or “How certain are you that you can finish homework assignments by the deadlines?” (Bandura 2006, Liew *et al.* 2008). These measures ask learners to respond dichotomously – yes or no – to whether they consider themselves capable of performing a specific task at several specific levels. The learner’s confidence is then rated on an 11-point rating scale that ranges from 0 to 10 (quite uncertain/complete uncertainty) to 100 (quite certain/complete certainty) at 1- or 10-point intervals. Finally, the sum of confidence ratings was then interpreted as the strength of the learner’s self-efficacy beliefs (Bandura 2006, Tsang *et al.* 2012). Questionnaires have many strengths when studying SRL and ability-related perceptions in older learners. They are efficient to administer and can provide reliable data. Unfortunately, using questionnaires can be challenging when assessing young children because they typically require learners to rely on their memories and interpretations of events, and to generalize those events across time and different contexts. As such, young children tend to conflate intention with action which may lead to a positive response bias. Also, Wilson and Trainin (2007) criticize these kinds of measures as lacking the ability to scaffold children’s responses. Furthermore, children may have limited experience with the response formats and they may find the language used in these measures too abstract and difficult to understand (McCaslin & Hickey 2001, Wilson & Trainin 2007). Young children in the early years of education are still in the process of developing learning and writing skills, and therefore, might not necessarily have the ability to respond to these measures. Therefore, a complementary method for studying young children’s SRL and ability-related perceptions may be by employing interviews.

The main aim of most interviews is to gather qualitative data about participants’ experiences and perceptions and therefore have the potential to provide learners with an important voice in research. Unstructured interviews invite participants to tell their stories and data is frequently presented in narratives. Structured interviews guide participants by asking questions that build on one another. Semi-structured interviews allow researchers to select from the interview protocol those questions that act as context-sensitive prompts, encouraging participants to reflect on their actions, thoughts, and feelings as well as on their awareness of specific features of the classroom context (Boekaerts & Corno 2005). These interview methods scaffold genuine discussion between researchers and children allowing probing and follow-up questions. However, interviews are also imperfect methods. Children are not always accurate or truthful in relaying their experiences and perceptions (Winne *et al.* 2002).

Children may try to show only what is socially desirable or what they think is expected from them. Therefore, yet another self-report method for studying young children's SRL and ability-related perceptions is by employing teacher ratings.

Teachers are uniquely positioned to observe children's SRL during daily activities in the classroom environments. Teacher ratings are reliable assessments when items reflect events that are general enough to be observed in all children and they describe behaviors that are easily and reliably observed (Perry & Meisels 1996). They are as efficient to administer as questionnaires allowing data to be gathered about large samples of participants. Like questionnaires and interviews, teacher ratings also have methodological limitations. They may contain a cognitive bias where general impressions of a child are influenced by perceptions of his character. A teacher may rate a child highly on several desirable classroom behaviors but his ratings of the child's behavior may be inaccurate because of the perceptions of that child's character.

2.4.3 Using situational methods: The interplay between children and learning contexts

Knowing what kind of SRL processes learners engage in and what kinds of values, goals, and competence beliefs they adopt are certainly important. However, it is also important to know how learners engage in SRL, how learners develop certain competence beliefs, why these processes and beliefs may fluctuate from time to time or in different contexts, and what outcomes evolve from such experiences (Turner & Patrick 2008). Research methods aiming to capture the complexity of motivational and SRL processes between learners and learning contexts take a situational approach. A situational approach considers learners to be part of their social and historical contexts where motivation is continually co-constructed and negotiated by their members. It is based on the use of multiple methods such as think-alouds (Biemiller & Meichenbaum 1992), trace data (Malmberg *et al.* 2010), a variety of error detecting tasks (Bassett *et al.* 2012, Dermitzaki *et al.* 2009, Howse *et al.* 2003, Labuhn *et al.* 2010), and classroom observations (Dermitzaki *et al.* 2009, Määttä *et al.* 2015a, Pakarinen *et al.* 2014, Perry 1998, Whitebread *et al.* 2008).

Think-alouds can be described as 'eavesdropping on someone's thinking' and focus specifically on the monitoring processes of SRL. Think-aloud measures vary in how structured they are, but they all ask learners to report verbally about their thoughts, emotions, and/or cognitive processes while performing a task

(Boekaerts & Corno 2005, Erickson 2006, Zimmerman 2008). These verbalizations include describing things learners' are thinking, feeling, or doing. The advantage of this method when using it with young children is that children are asked to register their ongoing thoughts and feelings as they occur, rather than be asked to recall them after doing the task. Unfortunately, reporting cognitions and feelings can interfere with the actual task, thus creating overload and possible bias (Boekaerts & Corno 2005). Therefore, children may need a great deal of practice before they can manage this dual task. Also, young children may not have a vocabulary that is sufficiently rich to describe their inner thoughts successfully. Although this method may be too challenging for researchers to use when investigating young children, educators can use this strategy in the classroom when teaching and supporting children's SRL. For example, in Biemiller and Meichenbaum's (1992) study, grade 1 to 6 teachers used a think-aloud technique when demonstrating and labeling children's metacognitive behavior in their classrooms, and by doing this encouraged self-regulation in their children. Supporting learners to think out loud enriches classroom discourse and gives educators an important tool for supporting children's learning. An alternative method for studying young children's SRL while they are doing the task is using trace data.

Traces are "*observable indicators about cognition that students create as they engage with a task*" (Winne & Perry 2000). Winne together with his colleagues (2006) developed a software program called gStudy that enables learners to make notes, create glossaries, label and index content, construct concept maps, search for information, chat and collaborate, and receive support. This environment was used, for example, in Malmberg *et al.* (2010) study where they explored how elementary school children self-regulated their use of study tactics. This was done by capturing log file traces of children's actions in the gStudy learning environment (*e.g.* notes, labels, indexes) and analyzing the effectiveness of their tactic use. The findings of their study suggested that it was not the tactic use itself that indicated the effectiveness of the learning, but rather the way the tactic was used. Trace methodologies are fairly new ways of investigating children's SRL and have the potential to provide teachers with a repertoire of ways to teach and support SRL for children.

Different kinds of tasks have gained a lot of attention especially in recent studies of young children's SRL and ability-related perceptions. For example, Blair and Razza (2007) assessed pre-school children's executive function with a peg-tapping measure of inhibitory control and an item-selection measure of

attention shifting. For the peg-tapping measure, children were instructed to tap twice with a wooden dowel when an experimenter tapped once, and once when the experimenter tapped twice. The task requires children to inhibit a natural tendency to mimic the action of the experimenter while remembering the rule for the correct response. These kinds of tasks have the advantages of making the assessment of SRL and ability-related perceptions more concrete and interesting for young children. However, they also need to be meaningful for children in order to engage them in the activity.

Researchers have turned to classroom observations as another method for gathering data to understand young children's SRL and ability-related perceptions in classrooms. Systematic observational methods record what learners actually do, rather than what they recall or believe they do in the classroom. Also, they allow links to be established between learners' behaviors and the context of the task or activity. Furthermore, particularly crucial for young children, they do not depend on the verbal abilities of the participants (Boekaerts & Corno 2005, Perry 1998, Zimmerman 2008). Like other methods, observation protocols have methodological limitations. Observations are limited to the examination of behavior and therefore can provide only limited insights into how learners make sense of tasks and events. Also, bias about the construct under study can influence what gets observed. To overcome this limitation, researchers have used different ways to record the observation, for example with audio or video. Furthermore, aspects of self-regulation (*e.g.* metacognition, motivation) and ability-related perceptions are difficult to observe reliably without asking participants about what they are thinking and doing (Butler 2002, Winne & Perry 2000).

2.4.4 Methodological considerations

Most of the SRL research has involved learners in the upper-elementary grades through to college (Dignath *et al.* 2008, Perry *et al.* 2004). The situation is similar with the research concerning learners' ability-related perceptions. For example, Klassen and Usher's (2010) review of 244 previous self-efficacy studies revealed that only 12 percent of the studies were conducted with children in elementary school, which was the lowest school degree in their review. As the most of previous studies have employed quantitative, self-report measures (Karabenick *et al.* 2007, Klassen & Usher 2010), perhaps the methodological decisions are one of the reasons why there is less research on young children's SRL and ability-related perceptions than there is for older learners. Implementing these kinds of

self-report measures (*e.g.* questionnaires) can be challenging when assessing very young children because they may lack the ability to respond to conceptually and verbally demanding measures. Also, children are not always accurate enough in reporting their experiences and perceptions or truthful about their motives (Winne *et al.* 2002). Furthermore, pre- and post-assessment may be insufficient to accurately capture the dynamics of motivational constructs that may vary over the course of task or learning activity. Addressing the limitations posed by self-report measures in assessing young children's SRL and ability-related perceptions remains a current challenge.

Researchers have turned to situational methods as another approach for gathering data to understand young children's development of motivation and engagement in SRL in the classrooms. Unlike self-report measures, the data from situational methods provides actual evidence of SRL processes. However, situational methods also have methodological limitations. Since situational methods do not ask participants about what they are thinking and doing, they can provide only limited insights into learners' perspectives. Therefore, a mixed-methods approach that utilizes both self-report measures and situational methods has the potential improve understandings about how SRL and motivation develops in children and can be supported in primary education classrooms.

Mixed-methods have been increasingly utilized in recent research of young children's SRL and ability-related perceptions. For example, Perry and VandeKamp (2000) used semi-structured interviews in their study to assess elementary school children's motivation and self-regulation in writing retrospectively. The interview protocol included a combination of pictorial rating and open-ended questions and was embedded in an authentic task in the children's classroom. In another study, Mantzicopoulos *et al.* (2008) developed the Puppet Interview Scales of Competence in and Enjoyment of Science (PISCES) instrument to investigate young children's motivational beliefs related to science learning. This instrument was intended for young, pre-literate children who may not possess the linguistic or information processing skills to articulate their perceived self-beliefs. The instrument was semi-structured employing a dichotomous response format (*e.g.* this child likes reading science book vs. this child does not like science books). Children's responses were also scaffolded with puppets. Further, Tirosh *et al.* (2012) used a structured interview based on tasks such as sorting items and geometry based activities such as drawing and copying different shapes. Before the task, children were asked whether they were able to do the task and to specify whether they were very sure or a little bit sure. Then

children were asked to perform the task and evaluate whether they were able to perform the task or not.

To conclude, investigating young children's SRL and ability-related perceptions as accurately as possible requires using both self-report and situational methods. Situational methods provide important information and evidence of the actual events, while self-reports provide children opportunities to share what they are thinking and doing during the event. Situational data also provides scaffolds while conducting self-reports which is very important when involving young children in the research.

3 Aims of the study

There are two general objectives in this dissertation, which are reflected in *Studies I–IV*. The first objective is empirical and aims at investigating whether children’s perceptions of themselves as learners contribute to their SRL and perceived success in school. The second objective is methodological and aims at employing a participatory research approach in order to better understand these phenomena by changing the focus from merely researching *about* children to also *involving* them in the research. The specific aims are as follows:

1. To investigate what success is and determine how it can be identified in a classroom context (*Study I–III*).
2. To explore and identify what characterizes efficacious learners in a classroom context (*Studies II, III*).
3. To investigate and specify what supports the development of efficacious learners in a classroom context (*Studies I–IV*).

In order to approach the general aims of this dissertation, specific research questions and aims for each independent study were formulated. *Study I* focused on researchers’ and children’s self- and social perceptions of success in classroom settings. This study combined data from different data sources in order to understand what counts as success for children and how it can be recognized and promoted in the classroom context. *Study II* aimed to identify young children’s perceptions of their confidence and success in different learning situations. In addition, the focus was on efficacious interaction in different learning contexts within the classroom. *Study III* set out to clarify what kind of personal and contextual factors support children’s perceived self-efficacy in social and independent learning situations. Since most of the data was from social learning situations, the association between social competence and perceptions of self-efficacy was also investigated. Finally, *Study IV* aimed to identify the characteristics and triggers for efficacious interaction in terms of task involvement in collaborative small-group learning situations. Further, the aim was to investigate how the quality of the task involvement was related to efficacious interaction between group members.

4 Methods

This dissertation study used a mixed method approach by combining different kinds of data and both qualitative and quantitative methods of data analysis (Creswell 2013, Creswell & Plano Clark 2007). In this study, each phase of data collection was developed in iterative cycles, where the experiences from previous data collection were used in grounding the next data collection. Thus the study represents a pragmatist view that is characterized as real-world and practice-oriented research (Creswell & Plano Clark 2007).

4.1 Participants and context

The four studies resulted in three sets of data. In first set of data (*Study IV*), the participants were six fourth-grade Finnish elementary school children (3 girls and 3 boys) aged nine to ten years. Working in two groups, children participated in a collaborative science project called *vital conditions of life*, where their task was to construct a shared understanding of the topic. The pedagogical task structure and instruction provided guidelines for collaborative working in three ways; first, by asking the groups to assign a role to each group member in terms of leader, recorder, and information seeker. Second, by scripting working phases in terms of asking children to internalize the requirements of the task by discussing and planning their goals and strategies for achieving them; researching the topic; bringing together their knowledge of the topic; and preparing a poster presentation for the whole class. And finally, by giving children prompts to get the working started at the beginning of each working session.

In the second set of data (*Studies II and III*), the participants were 24 children aged six to eight years ($M=7.375$; Med: 7) from four Finnish elementary school classrooms of three grade levels: preschool (2 girls, 2 boys; 16.7%), first grade (4 girls, 5 boys; 37.5%), and second grade (6 girls, 5 boys; 45.8%). Children were observed in classroom's authentic learning situations in literature, math, science, and art classes, comprising whole classroom joint working, small group, and independent activities.

These same children were also involved in the third set of data (*Study I*). However, four children were unable to participate due to classroom changes and three children refused to continue with the study. Therefore, the participants in this phase consisted of 17 children aged seven to nine ($M=7.882$; Med: 8) from three Finnish elementary school classrooms of three grade levels: first grade (1

girl, 1 boy; 11.8%), second grade (4 girls, 1 boy; 29.4%), and third grade (5 girls, 5 boys; 58.8%). In this study children were invited to participate in a ‘detective course’ in which they used digital cameras to capture authentic situations of success, joy, and achievement in formal (in terms of school) and informal (in terms of home and hobby) contexts.

In the first set of data, the participants were selected by their class teachers who identified a number of children thought to be high and low achievers. In the second and third data sets, the participants were selected using an MASCS instrument (will be described more detailed in Chapter 4.3.4).

4.2 Research design

This dissertation employs a childhood research approach where the focus develops from merely researching *about* children to also *involving* them in the research (Darbyshire *et al.* 2005, Fargas-Malet *et al.* 2010). This approach is based on participatory methodologies (Gallacher & Gallagher 2008, Gray & Harcourt 2012) that form a multi-method research design by combining traditional methods, such as observation and interviews (Dalli & Te One 2012), with more innovative methods, such as stimulated recall interviews (SRI) and photo-elicitation interviews (PEI) (Morgan 2007, Punch 2002, Rose 2007). The data was gathered in three data collections using multiple data collection methods which are presented in Fig. 2. Research design, participants and methods

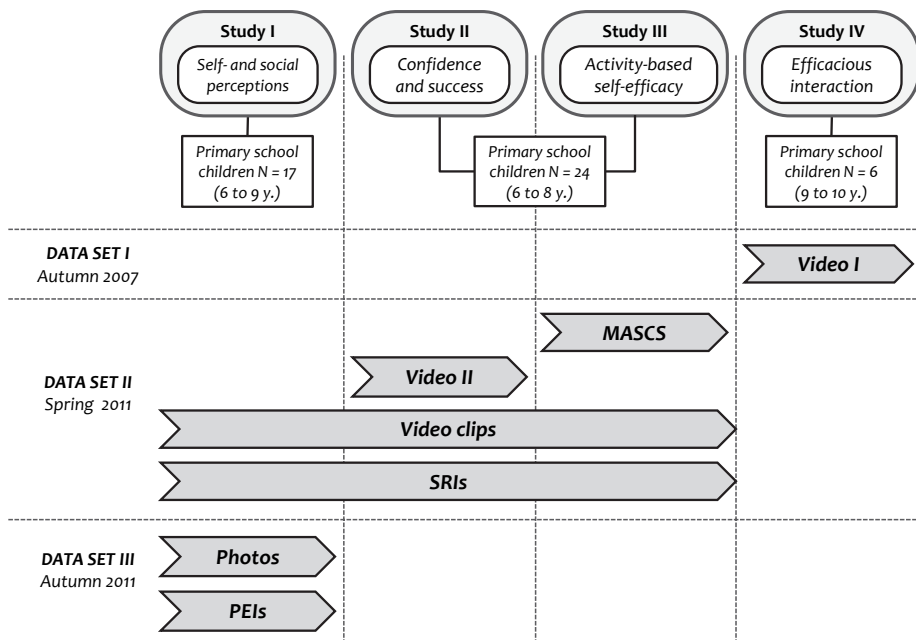


Fig. 2. Research design, participants and methods.

Study I combined video clips, SRIs, photos and PEIs in order to investigate researchers' and children's self- and social perceptions of success in classroom settings. *Study II* utilized video SRIs to explore children's experiences of confidence and success as well as the characteristics of efficacious learning situations in the classroom. *Study III* used information from a MASCS questionnaire, video clips and SRIs to identify children's perceived self-efficacy, and factors promoting and supporting their self-efficacy, as well as investigating the relationship between social competence and self-efficacy. *Study IV* used video observations of collaborative small-group learning situations to identify groups' efficacious interaction in terms of productive on-task involvement.

4.3 Data collection methods and procedures

Using a mixed method approach (Creswell 2013, Creswell & Plano Clark 2007, Tashakkori & Teddlie 2003), this dissertation combined qualitative and

quantitative data. *Studies I, II and IV* were mainly qualitative in nature, and based on video observations, video clips, photos and interviews. *Study III* relied on an instrument, interviews, and photos mixing both qualitative and quantitative methods. In the following chapters, the data sources and procedures used in the studies are elaborated in more detail. A summary of the methods and data analyses of the studies is presented in Fig. 3. Summary of the data sources and analyses (see Chapter 4.4).

4.3.1 Video observations and video clips

Two sets of video observations were used in this dissertation where the procedures followed the guidance by Derry *et al.* (2010) on conducting video research. Their guidance provided the basics on how to collect and use video records to conduct research in and about different learning situations in terms of selection and analysis of the video data, technology used to collect the data, and the ethics that guided both the data collection and the analysis. In research involving young children, video observations are becoming a more and more popular method of data collection because it enables researchers to comprehend children's functioning better by observing and listening to them, and particularly crucial for young children, the method does not depend on the verbal abilities of the participants (Flewitt 2006, Whitebread *et al.* 2008).

Study IV concentrated on first video observation data which was collected over five weeks in autumn 2007. Video observations were conducted by videotaping two groups' interactions in collaborative learning situations. The groups were videotaped with three cameras; two cameras were focused on the group's primary working stations while the third camera captured participants working elsewhere in the classroom. Group's working processes were videotaped during 10 lessons, resulting in 20 videotaped lessons in all and over 10 hours of video observation data.

The second set of video observation data was collected over seven weeks in spring 2011 and used in *Study II*. The video observations were conducted by videotaping the children individually with one moving camera during various classroom activities such as whole-class discussions, small-group activities and independent work. Each participant was videotaped twice, one hour per session, during the data collection period. In all, the video observation data set II contained 48 videotaped lessons and 32 hours of video data.

Utilizing the second video observation data, the researchers chose appropriate video clip(s) from each videotaped lesson to stimulate the discussion in SRIs. The criteria for selecting an appropriate video clip were: (a) *orientation*, referring to task-involvement and could be observed by participants performing task related activities; (b) *sustained activity*, referring to interest and could be observed by seeing a child's active participation and productive on-task working activity, and the child's initiation of action, effort or persistence; or (c) an *outcome*, referring to achievement which was observable, for example, by seeing the children mastering a task at hand. In all, the video clip data contained 42 minutes of video observations including 60 video clips lasting 40 seconds on average. This data was used in *Studies I-III*.

4.3.2 Stimulated recall interview (SRI)

Semi-structured SRIs were conducted in spring 2011. Stimulated recall is an introspective method which is used to prompt participants to recall thoughts they had while performing a task or participating in an event (Lyle 2003, Morgan 2007). This method has been widely used in childhood research because it enables researchers to investigate even very young children's perceptions in different learning context and typically provides prompts for children's responses (Wilson & Trainin 2007). However, SRIs have not been used in previous studies of young children's SRL or ability-related perceptions. In total, the SRI data comprised 48 interviews (2 interviews per child) where one interview lasted an average of 20 minutes and was conducted right after the videotaped lesson. The questions were part of a larger interview protocol from the AGENTS project, from which certain questions were analyzed in *Studies I-III*. The specific interview questions are described in more detail in the original articles.

Studies II and III aimed to identify children's ability related perceptions and their immediate experiences with success in different learning situations. *Study I* focused on children's self-perceptions of success and aimed to identify what factors influenced children's perceptions. Children were not given any feedback regarding their performance in the video clips or answering the interview questions. The interview questions were validated and re-formulated in a pilot study that was conducted and analyzed before these particular studies. Special attention was paid to framing the interview questions in a way that young children would understand what they are being asked and would need to reflect on their answers.

4.3.3 Photos and photo-elicitation interview (PEI)

Based on visual methodologies (Banks 2001), photo-elicitation (Harper 2002, Rose 2007) was utilized in *Study I* to access children's experiences of success, joy and achievement in school contexts. Previously, photos have been used to some extent in childhood research to increase children's involvement in the research process (Christensen & James 2008, Clark 2005, Einarsdottir 2005, Smith *et al.* 2005), but are not as common as other visual scaffolding methods such as using pictures and drawings.

Before the actual data collection, the children were invited to participate in a "detective course". The purpose of this course was to engage the participants in the data collection process, provide detective equipment (an Apple iPod Touch and a detective photo log to record any photographs taken), and have the participants practice capturing and saving moments of success. During the course, researchers and participants together discussed success; what it looks like, and whether it differs in various contexts, and created agreed-upon guidelines for how to identify moments of success. During the actual data collection, a participant-only photographic production strategy (Steger *et al.* 2013) was selected where the participants were asked to take their own photographs about either themselves, their peers or their teachers succeeding. In all, children took 174 photos (10 photos per child on average) during eight weeks in autumn 2011.

In *Study I*, PEIs were conducted once a week so that children had one week's time to take the photos. The focus of this study was on children's social perceptions of their peers' and teachers' success. The interview process began with viewing all the photos the child had taken and letting the child choose the one(s) he/she wanted to talk about. Photos were used as stimuli during the interview to provide children with a visual reference (Ali-Khan & Siry 2014) as a starting point for conversations about their experiences. The interview questions used in this study were part of a larger interview protocol from the AGENTS project. Again, the specific interview questions are reported in the original article for *Study III*. In all, the PEI data contained 29 interviews, 1 to 2 interviews per child.

4.3.4 Multisource Assessment of Children's Social Competence Scale (MASCS) questionnaire

The Multisource Assessment of Children's Social Competence Scale (MASCS) was used to rate children's social competence (Junttila *et al.* 2006). The scale includes 15 items divided into four areas of social competence: Cooperating skills, empathy, impulsivity, and disruptiveness (see Appendices B and C). Cooperative skills and empathy are dimensions of prosocial behavior and refer to socially desirable behavior such as cooperating and participating in group activities which are seen to promote learning processes (Junttila *et al.* 2006, McClelland & Morrison 2003). Impulsivity and disruptiveness are dimensions of antisocial behavior and refer to verbal abuse and social rejection and therefore have negative social outcomes (Dalton 2010). The rating consists of a 4-point scale that designates frequency as follows: 1=never, 2=rarely, 3=frequently, and 4=very frequently. To be socially competent, a child has to behave strongly in regard to the prosocial dimensions and demonstrate low instances of the antisocial dimensions (Junttila *et al.* 2006).

The scale was used in *Study III*, where the items were rated by the children themselves and by their teachers. With the exception of the difference in the personal pronoun (*e.g.* "I offer help to other students" vs. "Offers help to other students"), the items for both evaluators are similar. In total, the MASCS data (n=48) comprised 24 self-ratings and 24 teacher ratings and was collected in spring 2011.

4.4 Data analyses

This dissertation combined qualitative and quantitative data and analysis (Fig. 3. Summary of the data sources and analyses) (Creswell 2013, Creswell & Plano Clark 2007, Tashakkori & Teddlie 2003). More specifically the qualitative content analysis was complemented by quantitative methods of data analysis. This was done to construct a deeper understanding of the studied phenomena (Creswell 2005), by enriching and reinforcing the results with the complementarities of strengths of qualitative and quantitative approaches (Creswell & Plano Clark 2007, Johnson & Onwuegbuzie 2004).

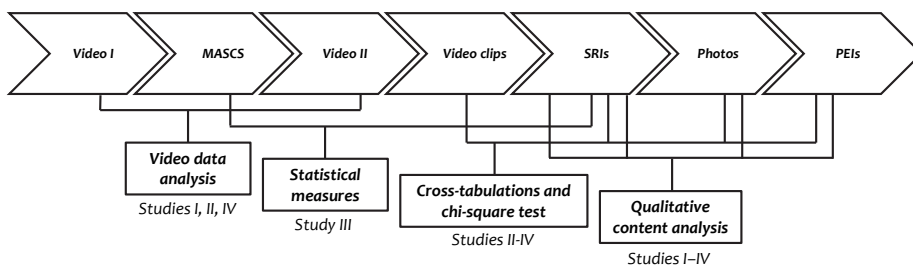


Fig. 3. Summary of the data sources and analyses.

In the following chapters, the analytical approaches used in the *Studies I–IV* are elaborated further. More detailed descriptions of the methods and data analyses are provided in the original articles about the studies.

4.4.1 Video data analysis

Performing analyses with video data is an iterative process that involves moving back and forth among the videotapes and researcher’s evolving interpretations over and over again (Barron & Engle 2007). In *Studies I* and *II*, a part-to-whole approach (Erickson 2006) was used because these studies focused on specific types of events. The emphasis was on identifying episodes of teacher initiated activities or child initiated activities, as well as different interaction contexts within the episodes. It was presupposed that from child initiated episodes children would be able to evaluate their confidence and success. One video clip presented an episode which was analyzed in *Study I*. In this study the focus was on identifying factors indicating success or succeeding in children’s behavior. In *Study IV*, a whole-to-part approach (Erickson 2006) was used to analyze two groups’ task involvement by viewing and re-viewing the data without orientation or guidance of theory. Using NVivo software, the analysis proceeded first by sequencing the whole sets of transcribed video observation data into social interaction episodes that reflected the children’s participation. Episodes were then coded into categories based on type and quality of task involvement. Also, the transitions between episodes were located where the triggers that caused the shift from one episode to another were identified.

As recommended by Bakeman (2000), in each of these studies, the coding framework for the video observation data included operational definitions for



each of the categories of behavior, together with operational descriptions of behavior related to each category and examples taken from the video-recorded events (an example presented in Table 1. Example of a coding framework for interviews, video clips, and photos below).

4.4.2 Qualitative content analysis

Qualitative content analysis is a systematic approach that involves coding, categorizing, and concluding in order to analyze the informational contents of textual data (Cohen *et al.* 2011, Miles & Huberman 1994). In *Studies II* and *III*, the content analysis applied an inductive strategy and focused on SRIs. The emphasis in these studies was on children's experiences of their perceived ability in specific video clips as well as their perceptions of success. In *Study I*, the focus was to triangulate SRI data and PEI data and the analyses. In this study a content analysis was also applied to photo analysis. In this case, the analysis was based on counting the frequency of certain visual elements in a clearly defined sample of photos and then analyzing those frequencies (Rose 2007).

To ensure the validity of the coded categories, the recommendations from Bakeman (2000) apply also for the content analysis. The examples of the coded categories were drawn from the original data to clarify how the categories had been established. Table 1. Example of a coding framework for interviews, video clips, and photos presents a brief illustrative example of a coding framework used in *Study I*. The focus of the study was to identify researchers and children's self- and social perceptions of success in the classroom context.

Table 1. Example of a coding framework for interviews, video clips, and photos.

Data source	Category	Description	Example of the Data
Interviews	Previous experiences	Any references to previous tasks or situations	Interviewer: What influenced your success in the situation? Child: I have done this kind of task before, so I knew this would be easy for me.
Video clips	Positive expressions and gestures	Any non-verbal communication or behavior such as smiles or cheers	
Photos	Task completion	Photos or video clips of an end product or a result of finishing a task	

4.4.3 Cross-tabulations and chi square test

Studies II–IV were interested in searching and testing for relationships among different factors. In looking for these relationships, a qualitative content analysis was complemented with descriptive statistics using IBM SPSS Statistics 21. Cross-tabulations with a χ^2 -test (significance level $p \leq 0.05$) were conducted to measure whether a relationship among variables exists or not. If the relationship appeared to exist, the size and strength of the relationship were further examined in order to define whether the relationship was statistically significant. Statistically significant refers to the likelihood that the relationship is caused by something other than mere random chance (Kline 2004). The effect sizes for χ^2 were calculated using Cramer’s V, which is a way of quantifying the size of the

difference between two groups and can range from numerical value of 0 to 1 (Abbott & McKinney 2013). The value of 1 indicates a large effect and means that the two variables have a perfect relationship with each other. A value of 0 indicates no effect and means that there is no relationship between the variables. Tables which have a large ($V \geq 0.50$) value can be considered to have a strong relationship between the variables, whereas tables with a medium ($0.30 \leq V < 0.50$) or small ($0.10 \leq V < 0.30$) value indicate a weaker relationship (Gravetter & Wallnau 2007, Kline 2004, Sun *et al.* 2010).

4.4.4 Other descriptive statistics

In *Study III*, children’s social competence was analyzed from the MASCS data by creating a scale where either self or teacher ratings could reach a maximum of 60 points indicating a high degree of social competence, and a minimum of 15 points indicating a low degree of social competence. Dimensions of prosocial behavior were rated as 1=never, 2=rarely, 3=frequently, and 4=very frequently and dimensions of antisocial behavior in reverse order as 4=never, 3=rarely, 2=frequently, and 1=very frequently. Combining the information from self and teacher ratings (Table 2. Rating scale for children’s social competence), the children were divided into three groups indicating; high, moderate, and low levels of social competence.

Table 2. Rating scale for children’s social competence.

Self-ratings	Teacher ratings	
	High	Low
High	4	3
Low	3	2

For example, if both a child’s ratings and his teacher’s ratings indicated a high degree of social competence, the child received an overall rating of 4. If one rating was high, but the other was low, the child received a final social competence rating of 3. Finally, if both the child and the teacher gave a low rating, the child received an overall social competence rating of 2. In summary, a rating of 4 indicated high social competence, 3 indicated moderate social competence, and 2 indicated low social competence.

In this same study, children’s perceived self-efficacy was analyzed by creating a rating scale (Table 3. Rating scale for children’s perceived self-

efficacy) from their answers to SRI question 1—Did you think you could succeed in the situation?—and question 2—How sure were you? First, the answers to questions were grouped. Answers to the first question were grouped into “yes” and “no” expressions. Answers to the second question were grouped into three levels: “Very sure” referring to answers where the child expressed being highly confident or definite in a specific situation or task. “A little bit sure” referring to answers where the child expressed that he/she was only a slightly confident either working in a specific situation or doing a specific task. “Not really sure” referring to answers where the child expressed not being sure in the situation. Next, these questions were used to create a 6-point scale describing children’s belief in their ability to succeed in the particular learning situation.

Table 3. Rating scale for children’s perceived self-efficacy.

Question 1	Question 2		
	Very sure	A Little bit sure	Not sure
Yes	6	5	4
No	3	2	1

For example, if a child answered “yes” to question 1 and “very sure” to question 2, his self-efficacy was graded 6. If a child answered “yes” to question 1 and “a little bit” to question 2, his self-efficacy was graded 5. If a child answered “no” to question 1 and “not really sure” to question 2, his self-efficacy was graded 3. If a child answered “no” to question 1 and “very sure” to question 2, his self-efficacy was graded 1. Applying this scale, values 5 to 6 indicated high self-efficacy, values 3 to 4 indicated moderate self-efficacy, and values 1 to 2 indicated low self-efficacy.

4.5 Reliability analyses

The reliability analyses for *Studies I–IV* were done to refine the coding scheme and to improve the results of the analysis. In *Studies I–III*, the interpretations of the data were tested for inter-coder reliability by classifying 33% of the data in each analysis phase (Miles & Huberman 1994). In *Study IV*, a reliability analysis was performed on the whole set of video observation data. This means that both the author of this dissertation and an independent coder coded 100% of the video data. The reliability analysis covered either the intercoder reliability using

Cohen's kappa (κ), or internal consistency of the coding scheme using Cronbach's alpha (α), or both depending on the data and analysis phase.

Intercoder reliability was measured in *Studies I–IV* to assess the degree to which the coding of the data by multiple coders was similar. This kappa value ranges from -1 to +1, where a value of 0.5 was considered to be acceptable (Cohen 1960, Gwet 2012, Sim & Wright 2005). The value +1 indicates perfect agreement between coders, whereas the value 0 indicates that the agreement between coders was no better than mere chance. The value -1 provides a means of determining whether the two variables have a positive or negative association with each other. However, negative values are rare and indicate observed levels of disagreement greater than one would expect by chance. Also, achievement of perfect agreement is difficult and often impractical given finite resources and time constraints (Gwet 2012).

Cronbach's alpha is a measure of the internal consistency of a test, scale, or coding scheme. It describes the extent to which all the items in a coding scheme measure the same concept or construct and how closely related a set of items are as a group (Tavakol & Dennick 2011). It depends on number of the coded items and the sample size. This alpha coefficient ranges in value from 0 to 1, where a value of 0.7 was considered to be acceptable (Cronbach 1990, DeVellis 2003, George & Mallery 2003). A high alpha value indicates that the items in a coding scheme are correlated to each other (Tavakol & Dennick 2011). The internal consistency of perceived self-efficacy and social competence scales were measured in *Study III*.

4.6 Ethical considerations

When involving young children in research, ethical issues such as informed consent, anonymity and confidentiality, protection, safety and well-being were all considered (Cocks 2006, Heath *et al.* 2007). In each empirical study, the guidelines of the National Advisory Board on Research Ethics (2009) and the modes of action endorsed by the research community as well as the participating school were all followed. The measures and procedures used in the empirical studies met the ethical guidelines for the treatment of young children as research participants.

Recruitment of teachers and participants in each empirical study was similar and happened in three phases. First, the principal of the school was emailed to describe the study, including the teachers' and children's roles in it. The principal

was asked to forward the study information to classroom teachers, and those teachers who were interested in participating contacted the researcher to enroll in the study. Second, the study was introduced more thoroughly to the teachers who were interested in enrolling their class in the study and their questions and concerns were answered and addressed. Third, before the data collection started, all classrooms were visited and the researchers were introduced to the children, along with the study and procedures to be used.

During the classroom visits both children and teachers were informed that their participation was not compulsory and the children were asked whether they wanted to participate in the study. Teachers were provided with consent forms for the children (see Appendix A). Teachers distributed the consent forms to the children approximately two weeks prior to data collection. Parents were also informed about the study and their child's involvement and they were encouraged to talk about the procedures with their child. Parents were asked to fill out consent forms on behalf of their children. The consent form included information about the research, how it would be disseminated and how the data would be stored.

Anonymity and confidentiality were ensured at every phase of the research. The children's identities were concealed with pseudonyms in the analysis, as well as in the written and verbal reports of the results, and in informal discussions with colleagues. Visual data was edited into stock images using Adobe Photoshop to ensure the participants' anonymity and confidentiality (Fig. 4. Example of the stock images created to ensure participants' anonymity). Throughout the study, the children's safety and wellbeing was emphasized by using non-harmful procedures.



Fig. 4. Example of the stock images created to ensure participants' anonymity.

To conclude, the modes of action endorsed by the research community, the guidelines for ethical research of the Finnish Advisory Board on Research Integrity (2012) and of National Advisory Board on Research Ethics (2009) have been and will be followed in the future.

5 Overview of the original articles

This dissertation consists of four articles (*Studies I–IV*). The author of this dissertation was the first author of each article and responsible for empirical data collection (*Studies I–III*), data analyses, theoretical grounding and interpretations of results and implications (*Studies I–IV*). Through a variety of approaches, this dissertation investigated young children’s motivation to learn through their ability-related perceptions and their experiences of success in different learning situations in the classroom (Fig. 5. Schematic overview of *Studies I–IV*). The emphasis was on the efforts in understanding whether children’s perceptions of the learning context and themselves as learners contribute to their effective functioning in school.

	Researcher’s interpretations	Children’s perceptions	Situation-specificity
Study I	Success	Success	Classroom context in general
Study II	Successful event	Situation specific confidence	Efficacious interaction contexts
Study III	Successful event	Activity-based self-efficacy	Social and independent learning situations
Study IV	Efficacious interaction		Small-group learning situations

Fig. 5. Schematic overview of *Studies I–IV*.

The dissertation uses the researcher’s interpretations of how effective classroom functioning in small-group learning situations ‘looks’. As the research evolves, children’s perceptions and views are valued as a primary source of information about their abilities to effectively function and succeed in school. Also, their functioning is investigated not only in one but a variety of learning situations. Finally, the researcher’s interpretations and the children’s perceptions are

combined in order to fully understand what and why is happening in the classroom.

5.1 Study I: Elementary school children's self- and social-perceptions of success

Study I focused on children's self- and social perceptions of success in a classroom context. The guiding assumption of this study was that children's experiences of success or failure guide their actions in the classroom and shape their perceptions of learning and themselves as learners. The focus of this study was on exploring what elementary school children (n=17, aged 6 to 9 years) understand success to be and how they recognize it in themselves and in others. By focusing on these self- and social perceptions of success, this study aimed to identify how children's experiences of success can be promoted during different learning activities in a classroom context.

From 41 video clips and 154 photos, over 220 codes for three success indicators, namely, task completion (*e.g.* finishing a task after a struggle), sustained activity (*e.g.* doing a writing task even when the class has ended and recess started), and positive expressions and gestures (*e.g.* smiling and triumphant gestures such as cheering), were analyzed. Six influencing factors, namely, positive emotions, ways of working, experiences of achievement, acknowledgment from peers and teachers, previous experiences, and skills, were identified from the participants' experiences of success, drawn from 63 interviews. In addition, children perceived succeeding either alone, together with peers or with the help with a teacher.

Overall, this study contributed to the understanding of what counts as success for children and how it can be recognized and promoted in a classroom context. In particular, this study invited young children to document their experiences with school success and then compared their documented experiences with their interpretations (provided in interviews) and their actual performance and functioning (evident in video clips). With this approach, children were acknowledged as being experts on their own lives and their views and experiences were taken seriously.

5.2 Study II: Involving children in reflective discussions about their perceived self-efficacy and learning experiences

The purpose of *Study II* was to investigate what kind of self-efficacy beliefs young children form in different classroom learning situations and to explore factors supporting children's perceived self-efficacy. In this study, elementary school children (n=24, aged 6 to 8 years) were invited to take part in reflective discussions about their immediate experiences of confidence in specific classroom learning situations. During SRIs, the video clips from the videotaped classroom activities were used to stimulate children and to provide a specific context for their evaluations. From 48 video-recorded lessons, about 430 episodes were located and analyzed in relation to find episodes where children initiated the activity and played an active role. Surprisingly, only 135 episodes of this sort were found. From these 135 episodes, researchers carefully considered 57 randomly selected episodes for video clips to be used in the SRIs, where the aim was to analyze children's experiences of confidence and success in three different interaction contexts, and identify reasons for the children's experiences.

The main findings indicated that young children experienced confidence in three levels—high, moderate and low— and either felt they were succeeding well or poorly. The most typical levels of confidence were moderate and high. Furthermore, positive thoughts and feelings were the most powerful reasons given for the experience of confidence and success at all levels. Three types of interactive contexts, namely child–teacher–task, child–task and child–child–task were identified as characterizing meaningful learning contexts supporting young children's experiences of confidence and success.

Overall, the findings from this study provided information concerning how educators can scaffold the confidence of young learners by involving them in discussions about their own learning experiences. The main argument of this study was that in reflecting on their own functioning and performance, children in discussion with a teacher may come to improve their self-regulatory skills and practices. However, this argument warrants a notion of a chosen perspective. Occasionally it seemed that there were discrepancies with regard to how children and researcher viewed and interpreted success in the classroom. Since the researcher chose the video clips presenting a successful situation under the discussion, sometimes the child did not recognizing himself succeeding. This is why children were invited to not only provide data but also to choose data for the analyses in next data collection (III).

5.3 Study III: Personal and contextual contributors to young children's activity-based perceived self-efficacy

Study III broadened the analysis of *Study II* by investigating the same elementary school children's (n=24, aged 6 to 8 years) activity-based self-efficacy perceptions in more detail. Analyzing 48 SRIs including 60 video clips, the aim was to investigate what kind of personal and contextual factors support children's perceived self-efficacy in social and independent learning situations. Since most of the data was from social learning situations, the association between social competence and self-efficacy perceptions was also investigated from 24 participant and 24 teacher MASCS ratings.

The main findings showed that children with higher self-efficacy demonstrated more stable perceptions and greater involvement in social learning situations. However, a statistically significant relationship between perceived self-efficacy and social competence was not found. For social competence, the skills for effective functioning in social learning situations were considered and determined using information from MASCS data. Children also identified personal (positive emotional states, experiences of mastery, their own strategic behavior) and contextual (feedback and support) factors promoting their perceived self-efficacy. Overall, this study suggested that educators should understand that children's emotional states greatly influence their confidence in both social and independent learning situations. Furthermore, the contextual factor was found to be one of the most crucial distinguishing factors between children with high and low levels of perceived self-efficacy. In this study, children were invited to be partners in the data collection through an SRI technique that focused on naturally occurring activities in their typical classroom settings. This approach stands in sharp contrast to much of the research into young children's self-efficacy, which has mainly relied on clinical measures, laboratory tasks, or researcher-manipulated situations. Accordingly, the methods used in this study were seen as being more developmentally appropriate for children in primary education because the content in the video clips was more concrete and accessible to young children.

The main observation from this study is related to a retrospective approach to the perceived self-efficacy. The aim of employing stimulated recall was to overcome some of the typical challenges faced in investigating young children's ability-related perceptions, such as children's difficulties differentiating between what really happens and what they would like to happen. Therefore, the video clip

prompts were designed to invite the participants to recall their thoughts during a specific learning situation. Although the video clip prompts may have skewed the accuracy of the determined self-efficacy levels, these prompts were necessary given the age of the participants.

5.4 Study IV: Triggers of students' efficacious interaction in collaborative learning situations

Study IV presented a case study that investigated elementary school children's (n=6, aged 9 to 10) social interaction while working in small groups in science. The particular motivational component under the investigation was the students' willingness to maintain interest and attention during a task. The aim of this study was to identify what characterizes and triggers children's efficacious interaction in collaborative learning situations. This was done by exploring and analyzing task involvement and the quality of the interaction from video observation data at both individual and group levels. From 20 video-recorded lessons, about 240 episodes and 235 transitions were identified and analyzed in relation to the aims of this study. In addition, three types of triggers were analyzed from the transitions.

The main findings proposed that simply working on the task did not guarantee that the group's work was collaborative in nature. Not even when the collaboration was scripted into the instructional and pedagogical structure of the task. This study argued that when studying children's social interactions in collaborative learning situations, there is a need to consider new ways of analyzing and measuring the effectiveness of the interaction. Therefore, in this study, active participation and productive on-task working was used to describe a group's efficacious interaction. In addition, group progress triggers (*e.g.* support from a peer) were found increasingly during children's on-task activities most typically. Although this seems a slightly self-evident considering that children participated in a collaborative small-group learning situation, it was interesting that contextual triggers (*e.g.* presence of a teacher) were found occasionally to decrease the children's and groups' productive on-task involvement.

One of the main discoveries from this study is related to the method. Although the video observations enabled the researcher to analyze children's functioning in the classroom over and over again, the emphasis was too heavily on the researcher's interpretations of what was going on in the situation. Therefore, in the subsequent data collection phase (II), video observations were

combined with other data sources, such as stimulated recall data to gain knowledge about the factors influencing children's observable functioning in the classroom from young children's points of view instead of just relying on the researcher's interpretations.

6 Main findings

This chapter aims to describe children's perceptions and experiences of success, the characteristics of efficacious learners, and the factors supporting the development of efficacious learners in a classroom context and in different learning situations. Building from the theoretical framework and the results from *Studies I–IV*, this dissertation argues that the relationship between a person, his behavior, and the environment is critical for effective learning and school success (Fig. 6. The main components of the findings). The results of this dissertation which are presented below according to the three research aims introduced in chapter three.

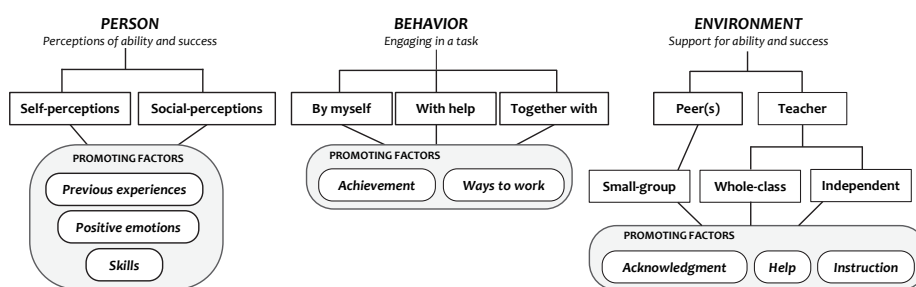


Fig. 6. The main components of the findings.

6.1 Success in a classroom context

In this dissertation, three success indicators were determined by combining the researcher's and children's interpretations of success. *Studies II* and *III* relied on the researcher's social perceptions of success derived from video clips, whereas *Study I* broadened the researcher's views with children's self- and social perceptions of what counts as success for themselves and others derived from the photos. The analysis focused on exploring whether there were any similarities within the video clips and photos, and furthermore identifying indicators of success.

The first indicator was task completion, which referred to situations where the children had finished a task. Previous research has also acknowledged this indicator as an important factor for school success because task completion increases a learner's ability-related perceptions, which have a direct influence on engagement, that is, whether a learner decides to sustain an activity or quit

(Määttä *et al.* 2012, Schunk & Ertmer 2000). The second indicator was sustained activity, which is linked to previous studies of student engagement (Akey 2006, Fredricks *et al.* 2004). The findings of this dissertation suggest that children who concentrate on their work, demonstrate enthusiasm about their work, and are interested in lesson content will do well because they feel confident and good about themselves and their abilities (Pajares & Schunk 2001, Patrick *et al.* 2007, Schunk & Mullen 2012). The third indicator, positive expressions, was found mainly from children's photos. In these photos, children were smiling or making triumphant gestures such as cheering. This finding is in line with extensive amount of research from positive psychology which has provided evidence that happy students are also higher achievers (Seligman *et al.* 2009).

Overall, these findings contribute to the understanding of what counts as success in a classroom context. Also, the participatory methods used to identify self- and social perceptions offer unique contributions not only to determining success indicators but also to acknowledging children as being experts on their own lives (Clark 2005, Clark & Moss 2001).

6.2 The characteristics of efficacious learners in the classroom context

There were two determinants that characterized efficacious learners in this dissertation: first, they had higher ability-related perceptions, and second, these perceptions were stable across different learning situations and types of activities. *Studies II* and *III* focused on exploring young children's perceived self-efficacy in whole-class, small-group, and independent learning situations. In the SRIs, children were asked a) whether they believed that they could succeed in the situation and b) how sure they were about it. For the first question, the answers ranged from yes (75%) to no (13%). In four interviews, children were unable to answer this question. For the latter question, the answers ranged from being very sure (33%), being little bit sure (37%) to not really being sure (18%). Children were unable to give an answer to this question in three interviews. According to the overall analysis, 11 of the participants perceived high self-efficacy, seven perceived moderate, and six perceived low self-efficacy. In line with previous studies (Tirosh *et al.* 2012) these findings suggest that young children typically have high perceptions of their ability to perform different types of activities.

The results from *Study III* showed that children with high self-efficacy had more stable perceptions across learning situations than did those with moderate or

low perceived levels of self-efficacy. Previous research has demonstrated that self-efficacy among efficacious learners possesses a certain degree of generality across activities (Bandura 1997, Pajares 1996). Accordingly, in this dissertation, children with moderate self-efficacy experienced being either moderately confident in whole-class learning situations or highly confident in independent learning situations, but they were uncertain about their abilities in small-group situations. Moreover, children with low self-efficacy were highly confident in small-group situations but expressed low confidence in whole-class and independent situations (Fig. 7. Self-efficacy profiles in different learning situations).

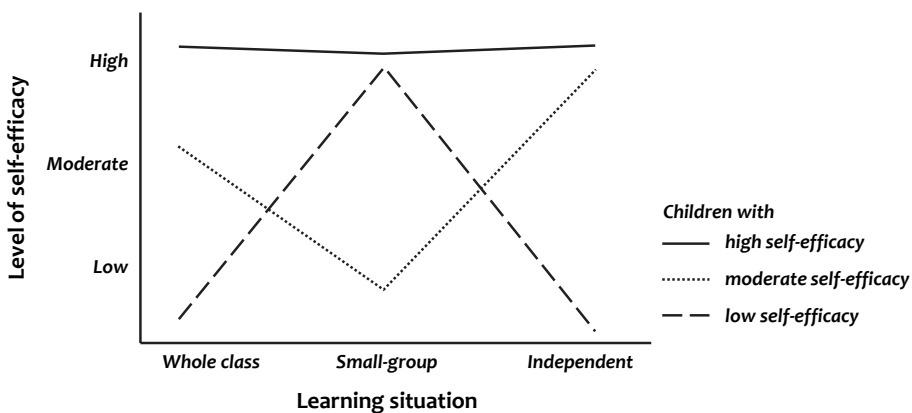


Fig. 7. Self-efficacy profiles in different learning situations.

For children with low levels of perceived self-efficacy, small-group learning situations seemed to provide opportunities to discuss and co-construct personal beliefs about their ability together with peers. Small-group learning activities foster effort, thinking, strategies and evaluation that may lead to changes in learners' perceptions of themselves as learners (Paris & Newman 1990). However, this did not happen for children with moderate levels of self-efficacy which may be due to, for example, to group composition.

To conclude, efficacious learners demonstrate higher and more stable ability-related perceptions and greater involvement in social learning situations. Efficacious learners are motivated and engaged in learning, which promotes their overall competence as learners (Pajares 1996, Schunk & Mullen 2012). The advantage of identifying characteristics of efficacious learners is that it highlights

that even young children are capable of evaluating their abilities in a classroom context (Tirosh *et al.* 2012, Valeski & Stipek 2001, Wilson & Trainin 2007). Also, it provides educators with information concerning how they can scaffold the development of efficacious learners by involving them in discussions about their own learning experiences and facilitating children's own evaluation processes.

6.3 Contributors to the development of efficacious learners in different learning situations

In *Studies I–III* children's personal processes were explored by analyzing their experiences with success as well as their activity-based perceived self-efficacy in social and independent learning contexts. *Study IV* complemented these studies by characterizing efficacious interaction in a social learning context. Children's perceived self-efficacy as well as their experiences of success were analyzed from SRIs, and the characteristics of efficacious interaction were identified from video observation data. In the SRIs, children were asked to name reasons for their confidence in a particular situation and evaluate their success after the situation. In this dissertation, these reasons were considered to contribute to the development of efficacious learners.

Two types of contributors towards children's efficacious learning in different learning situations were identified: personal and contextual. Personal contributors were experienced positive emotional states, mastery experiences, and strategic action, whereas contextual contributors consisted of feedback and support from teacher and peers. These findings are related to the sources of self-efficacy identified in previous research (Bandura 1997, Pajares & Usher 2008). In previous studies, personal contributors such as mastery experiences and emotional and physiological states have been shown to positively affect achievement and motivational outcomes (Joët *et al.* 2011, Pajares & Usher 2008). In addition, contextual contributors such as vicarious experiences and verbal and social persuasions have been shown to influence learners' confidence in their abilities to succeed (Margolis & McCabe 2006). The findings of this dissertation suggest that contextual contributors were one of the most crucial distinguishing factor between efficacious and non-efficacious learners. Children who experienced low self-efficacy indicated that they did not perceive receiving any or enough support and/or feedback from the teacher or their peers. Previous research has suggested that different learning contexts (*e.g.* working independently, in a small group or with a teacher) appear to afford differential opportunities for effective learning

(Whitebread *et al.* 2007). The results of this dissertation support this finding by showing how positive emotional states supported efficacious learners in independent and whole-class learning situations by making them more confident during the learning activity and sensitive enough to recognize when they succeeded with the activities. Further, feedback and support from peers promoted effective learning especially in small-group learning situations.

7 Discussion

The purpose of this last chapter is to discuss the theoretical and methodological considerations, as well as practical implications of this dissertation. In addition, the strengths and limitations are also discussed and ideas for future research are suggested.

7.1 Theoretical contribution

As argued before, the primary school years are a critical developmental period for fostering the will for learning. The findings of this dissertation shed light on how young children view success in the classroom and provided information about the characteristics of efficacious learners and the factors supporting their development.

In this dissertation, children's positive emotions were found to be the basis for their ability-related perception and engagement. Previous research has indicated that emotional states have strong effects on learning as children draw conclusions about their ability and anticipated success or failure from their emotional reactions (Joët *et al.* 2011, Usher & Pajares 2008). According to these studies, negative thoughts and anxiety can weaken children's ability-related perceptions and increase stress related to the task. If a child feels anxious about an upcoming writing task, for example, the negative affective responses that arise might confirm his already low perceptions of his writing ability and hinder his overall engagement and success at that task. These findings support previous studies showing the importance of mastery experiences for children's perceived ability. If negative effects interfere with learning, they also interfere with opportunities for obtaining mastery experiences, which also leads to a self-confirming prophesy of low ability.

This dissertation contributed to the understanding of children's activity-based perceived self-efficacy (social vs. independent). The findings showed that children experienced higher self-efficacy in social learning situations where these ability-related perceptions were more stable, than they did in independent activities. Also, children with low levels of perceived self-efficacy participated more often in independent learning activities than did children with high levels of perceived self-efficacy. Previous research has argued that the learning environment, domains, and tasks account for some variation in children's confidence and competence (Bandura 1993, 1997, Wigfield *et al.* 2004). For

example, children may be more strongly motivated in mathematics than they are in reading. Self-efficacy in reading involves confidence in language and comprehension skills, whereas self-efficacy in mathematics involves confidence in the learner's numeric skills. These skills are qualitatively different, which may indicate that children's sense of what it means to be efficacious in each area differs qualitatively as well (Griggs *et al.* 2013, Pajares *et al.* 1999, Wigfield *et al.* 2004). Within a particular subject area, the context can have a great impact on children's ability-related perceptions and performance. For example, a capable but not very confident reader might read a passage from a book independently at home with ease and accuracy, but struggle doing so in front of the teacher and classmates (Wigfield *et al.* 2004). However, little is known about the influence of different types of activities on young children's ability-related perceptions. In this dissertation, children's ability-related perceptions were studied in whole-class, small-group, and independent activities. Therefore, this dissertation can be considered to provide a new dimension—activity-based self-efficacy—when investigating the context-dependency nature of self-efficacy beliefs.

Higher ability-related perceptions increase learners' engagement which leads to success. In this dissertation, children were more likely to succeed with tasks when they were able to engage with the activity and supported by the environment. This process included three phases; task involvement, sustained activity and achievement, which children also identified as indicators of success. Task involvement includes processes that precede efforts to act and set the direction for the activity such as deciding and modifying ways of proceeding with the task. These processes were identified in *Study IV*. Sustained activity includes processes that occur during the activity and affect attention and performance. In *Study IV*, controlling attention and resisting distraction were found to be the most critical processes of engagement for learning. Further, achievement includes processes that occur after performance, such as influences on the learner's response to his experiences. In *Studies I–III*, children were provided with opportunities to evaluate their confidence and performance regarding specific tasks or situations.

Furthermore, the findings regarding the influence of feedback and support from peers and teacher were very interesting. In this dissertation, teachers had an important role in supporting and co-constructing children's ability-related perceptions, their engagement, and their personal standards for success. This co-construction is critical to the development of SRL because helping children to participate and evaluate actively in their own learning forces children to confront

their own perceptions and to notice when they are sufficient and when they are not (Paris & Newman 1990). These findings support the notion of the significance of teachers' evaluative messages for young children's learning as suggested by (Pajares 2006). Feedback from teachers and peers has the potential to strengthen or weaken learners' ability-related perceptions during particular activities or specific tasks. Whereas positive evaluations can encourage these perceptions, negative evaluations can more easily defeat these perceptions (Joët *et al.* 2011, Margolis & McCabe 2006). The results showed that children whose ability-related perceptions were low did not experience getting any support and feedback from the teacher even when the researchers observed a teacher providing support and feedback. Previous research has suggested that children with high ability-related perceptions are more likely than children with low perceptions to seek help when they need assistance. Children who need the most help are the most reluctant to seek it (Newman 2002, Paris & Newman 1990), as if help-seeking might lower children's perceptions of their own ability or reveal their lower ability to others. This is unfortunate because seeking assistance is an important SRL strategy (Newman 2002) that highlights the important relationship between SRL and ability-related perceptions.

As suggested by previous research, integrating SRL and ability-related perceptions was valuable and informative when describing the process through which children engage and regulate their academic performance and functioning, as well as in understanding the factors underlying their motivation to learn. The findings suggested that children who felt confident, demonstrated more self-regulatory behavior and experienced success more often than other children did. These findings are in line with previous research showing that effective SRL depends on learners developing a sense of self-efficacy for learning and performing well (Cleary & Zimmerman 2012, Zimmerman 2000). Previous studies of young children's SRL and ability-related perceptions have debated whether young children are capable of assessing their learning and motivational beliefs. While other studies have suggested that young children are not capable of regulating and assessing their learning and competence in a sophisticated fashion, others have suggested the opposite and provided extensive evidence on how young children are not only able to regulate their learning behavior but also to understand the process of self-evaluation. The results of this dissertation support the findings from the latter studies by showing that children in kindergarten to second-grade are able to judge their own confidence and performance and have distinct views about succeeding in the classroom.

7.2 Methodological reflections

The mixed method approach used in this dissertation and its related research triangulates both qualitative and quantitative methods aiming to serve the dual purpose of explaining as well as understanding the phenomena better than either of the methods would have done by itself (Creswell 2005, 2013). As the qualitative data analysis aims to provide a deep understanding of the phenomena, the statistical analysis complements this by providing a detailed assessment of the qualitative interpretations (Creswell & Plano Clark 2007). The most common criticism of mixed method studies is that it is not just about mixing data sources and methods but also about mixing paradigms which is seen as being problematic (Creswell 2013, Creswell & Plano Clark 2007, Morgan 2007, Onwuegbuzie & Johnson 2006). However, as suggested by Creswell and Plano Clark (2007) as well as Johnson and Onwuegbuzie (2004), mixed methods research does not aim to combine philosophical ground ideas behind qualitative and quantitative research, but instead relies on pragmatism which highlights the importance of the pragmatic value of doing research.

In this study, the mixed method approach was adopted to develop the data analysis and to combine different kinds of data to better approach the aims of this dissertation and meet the challenges inherent in studying cognitive and motivational constructs in young learners. The qualitative strength of the study was in acknowledging young children as active informants of their experiences by affording each child with the right to explain, extend, and reflect upon their learning experiences. Using this kind of participatory approach with concrete and accessible methods, the veracity of the findings was ensured and deeper understanding of their learning experiences and ability-related perceptions gained. The quantitative strength of this study, on the other hand, was the use of descriptive measures in order to establish the statistical significance behind qualitative findings and interpretations. While different kinds of data were collected and different analytical strategies were adopted, the focus was mainly on young children's own experiences and perspectives.

In general, when evaluating qualitative or quantitative studies, the two most central aspects of assessing the quality of a measure are its validity and reliability. Validity refers to whether the measure succeeds in measuring what it is supposed to, whereas reliability refers to the degree to which the measure can be replicated (Onwuegbuzie & Johnson 2006). However, when methods are mixed the results are typically something more than simply adding qualitative to quantitative or

vice versa. Therefore, it can be argued that mixed method research cannot be judged based on traditional criteria for the reliability and quality of research, but instead slightly different evaluations of the quality of the research are needed (Onwuegbuzie & Johnson 2006, Tashakkori & Teddlie 2003).

One central concept that has been suggested as appropriate in evaluating mixed method research is triangulation. Broadly triangulation is defined as the use of multiple, mainly qualitative and quantitative methods in studying the same phenomenon for the purpose of increasing the validity (quantitative) and credibility (qualitative) of the study (Creswell & Miller 2000). This is done by analyzing a research question from multiple perspectives and employing multiple methods, data sources, theories and/or investigators while doing so (Hussein 2009, Johnson *et al.* 2007). This implies that triangulation is the combination of two or more methodological approaches, theoretical perspectives, data sources, investigators and/or analysis methods to study the same phenomenon (Hussein 2009).

Methodological triangulation involves the use of multiple qualitative and/or quantitative methods to study the research questions (Hussein 2009, Tashakkori & Teddlie 2003). This dissertation employed various qualitative and quantitative methods including MASCS questionnaires, video observations, SRI, PEI, and photos. Also, various approaches were used to analyze data including video analysis, qualitative content analysis, cross-tabulations and a chi square test.

Data triangulation involves using different sources of information in order to increase the validity of the study (Hussein 2009, Johnson *et al.* 2007). In this dissertation, information was gathered from teachers (MASCS), children (MASCS, video observation, interviews, photos), and researchers (video clips). In *Study II*, researchers chose video clips under the discussion with children. Divergently in *Study I*, children chose photos they wanted to discuss during the interviews. The findings from both of the studies indicated that there exist discrepancies with regard to how children and adults interpret events in the classroom. Researchers' interpretations provided information from the objective perspective, whereas children's interpretations provided information from the subjective perspective. When combined, both of the perspectives were able to provide deeper understanding of children's actions, confidence, and success, than one perspective alone could have done by itself.

Investigator triangulation involves using several different investigators in the analysis process (Hussein 2009, Johnson *et al.* 2007). The analyses of this

dissertation were conducted by the author, but the interpretations of the data were tested with other coders for inter-coder reliability using Cohen's kappa.

By using a participatory approach and triangulating the data, this dissertation aimed to provide a comprehensive understanding of the influence young children's perspectives and perceptions have on their performance and functioning in the classroom without simply relying on the researchers' interpretations. The participatory research practices used in *Studies I-IV* are novel and innovative ways to embrace children's competencies, perspectives and experiences.

7.3 Educational implications

This dissertation provides implications for educators in primary education and for researchers in the field of learning and motivation. The findings provide information about the features of classroom structures and pedagogical practices that increase young children's confidence to regulate their learning more efficiently. Ultimately, focusing on children's academic skills and competences, and support mechanisms are powerful means of changing unsuccessful developmental trends into successful ones for every child.

First, the findings of this dissertation indicate that educators should take into account that children's emotional states greatly influence their learning in both social and independent learning situations. Children's motivation is influenced strongly by the kinds of experiences they have in school. By teaching children to identify and recognize their emotional states during moments of success and failure, educators can help them to evaluate and understand the reasons that led them to experience success or failure (Margolis & McCabe 2006, Usher 2008). This understanding is critical for self-regulation because it provides the direction for the learner's future actions.

Second, in this dissertation, children who felt confident experienced success more often. Also, children experienced higher ability-related perceptions in social learning situations, where these perceptions were more stable than they did in independent learning situations. Further, children who experienced low ability-related perceptions indicated that they did not receive any or enough support and/or feedback from the teacher or peers. These findings can thus be considered helpful for educators when they are planning learning activities and support that enhances children's confidence and learning. Educators can support children's learning by focusing on creating caring and emotionally supportive learning

environments in which positive interactions among teacher and peers are encouraged, and accurate feedback together with autonomy support provided (Griggs *et al.* 2013, Perry 1998). Furthermore, children's perceptions of success recognized effort as path to mastery and achievement. Therefore it is important to encourage children to take on challenges, exert effort, and tackle challenges, but also to make sure that effort pays off and that children recognize and experience success. This is where SRL comes into play by supporting productive engagement which will lead to success. The messages educators send influence young children's learning and shape their ability-related perceptions greatly.

Third, since mastery experiences were also found to influence children's learning, educators should, as often as possible, invite children to evaluate their own performance in varying learning situations. The best way to strengthen self-regulation and ability-related perceptions is to have children identify those things they did well not only in assigned tasks (Bandura 1997), but also in other classroom activities, such as in social interactions with peers or collaborative interactions. Also, it is important to help them to reflect on the learning process and be conscious of their actions (Paris & Newman 1990). Educators can demonstrate this process by evaluating their own performance in front of the class, specifically identifying what they did well and how they plan to build on their success. To conclude, learning situations that offer strong instructional and emotional support boost young children's confidence to engage in self-regulatory practices (Dignath & Büttner 2008, Kramarski *et al.* 2013).

Fourth, other researchers can benefit from the research tools and study designs used in this dissertation to understand young children's SRL, their ability-related perceptions, and successful learning experiences in classrooms. The study designs and research tools used generated different types of data (interviews, researcher selected video clips, child selected photos), which were triangulated in a mixed-method and longitudinal approach. From the longitudinal perspective, the most important discovery was that children's and adult's perspectives vary – sometimes significantly. For example, the findings from *Studies I* and *II* indicated that there were discrepancies with regard to how children and researchers viewed and interpreted succeeding in the classroom. When the researcher chose a successful situation for discussion, sometimes the child did not recognize himself succeeding. This is why children were invited to not only provide data but also choose data for the analyses in later studies.

7.4 Strengths and limitations

Investigating motivational aspects of SRL provides a good starting point for understanding young children's learning and their development into efficacious learners. Knowing about children's perceptions related to their ability, learning, and learning contexts is certainly important. Specifically when these perceptions and experiences gradually form different values, goals, and more permanent competence beliefs. Having insights from the children's perspective will offer valuable information to educators about the features of pedagogical practices and classroom structures that increase children's confidence in regulating their learning more efficiently.

Methodologically, this dissertation employed a novel approach to investigate young children's motivational aspects of SRL in naturalistic learning contexts. The children's role during the data collections increased from being purely informants to becoming partners in data collection through video stimulated and photo elicited techniques. This contrasts with much of the research about young children's SRL and ability-related perceptions, which have strongly relied on clinical measures and laboratory tasks which have significantly underestimated the self-regulatory abilities of young children. Also, one of the strengths of this dissertation was the use of video observations in relation to SRIs and PEIs. While observations record what learners actually do, rather than what they recall or believe they do, interviews acknowledge children's perceptions and views on what they consider is happening in the situation. Thus the results do not rely only researchers' interpretations of events. Also, using observations does not depend on the verbal abilities of the participants, which is crucial in studies involving young children. Further, while observations allow links to be established between learners' behaviors and the context of the task, with interviews it is possible to consider learners' personal processes related to learners' behavior and the learning context. Furthermore, this dissertation utilized various data collection tools and analysis methods. From this perspective, the strength of this study is that it analyzed a considerable amount of different types of data not only to assess but to understand young children's learning skills and motivation.

Despite the potential contributions of this dissertation, there are also some limitations that need to be acknowledged. First and foremost are the characteristics of the sample that make generalizing these results to a greater primary education population unwise. To elaborate, the sample sizes in *Studies I–IV* were relatively small varying from six to 24 participants. Also, the diversity

factors (such as ethnicity, family, income, employment) in Finnish elementary schools are minimal compared to other parts of the world. Therefore, these findings can be considered only suggestive. It would be important to replicate these studies in larger samples in more diverse contexts.

Second, with regard to how young children's ability-related perceptions were approached in this study, the study designs need to be revised in order to capture perceived self-efficacy before task performance as (Bandura 2006) has recommended. Thus the level of self-efficacy reflects the learner's perception of capability in light of the task demands rather than how one feels having completed the activity. However, in *Studies II* and *III* children were shown either video clips or photos of their previous performance and asked to assess their confidence retrospectively. By employing SRI and PEI methods, the aim was to overcome some of the typical challenges when investigating young children's ability-related perceptions such as children's difficulty in differentiating between what really happens in particular situations and what they desire to be the real event (Tirosh *et al.* 2012). Also, when children are asked to generate judgments about their academic capabilities without a clear activity or task in mind, they tend to mentally aggregate related perceptions of their capabilities that they hope will be related to imagined tasks (Pajares 1996). Therefore, prompted by a video clip or a photo, SRI and PEI invited children to recall their concurrent thinking during the event in a specific learning situation.

7.5 Future research

It is hoped that the results of the studies reported in this dissertation contribute to on-going efforts to understand the development of efficacious learners. Motivational constructs such as ability-related perceptions provide a good starting point; however there is still a lot to understand about children's motivational aspects of SRL. The findings presented in this dissertation suggest future work on young children's SRL in following areas.

From the theoretical perspective, more research into young children's SRL and ability-related perceptions are needed. In this dissertation ability-related perceptions were found to be key drivers of motivation for SRL. Ability-related perceptions were strongly influenced by the support (*e.g.* feedback and support, instruction) children perceived in classrooms. Therefore, future studies should examine, for example, teachers' pedagogical practices in terms of their motivational messages in the classroom, what such practices communicate to

learners, and how to best support teachers to promote children's motivation in the classroom. Also, since ability-related perceptions are a dynamic construct, the type of activity can make a big difference within one domain. Social and independent learning situations are typical classroom activities in primary education and are familiar types of activities for children. These activities provide learners with different kinds of learning opportunities inviting children to use different kinds of self-regulation strategies, which provide an interesting context for future studies of young children's SRL. To date, the issue whether children conceptualize and/or experience motivation differently in varying learning contexts has not been addressed systematically, and is therefore an important topic for future research. Furthermore, more in-depth investigations of subjective and contextual contributors for young children's motivation and SRL are needed. Future studies are encouraged to look beyond the traditional source suggested by Bandura (1997) and involve children's own perspectives more when investigating their motivation for learning.

Methodologically, research should continue improving developmentally appropriate tools such as observations and interview protocols to involve young children in the assessment of their SRL and ability-related perceptions in authentic classroom contexts. The items in these measures should employ short and relevant tasks that make the measures more concrete and accessible to young children (Wilson & Trainin 2007). Also, researchers are being encouraged to use different types of visual aids to support young children to respond and to increase their involvement in the research process (Christensen & James 2008, Clark 2005). Further, future research should involve more mixed-methods studies that make use of these innovative tools and triangulate multiple sources of data (*e.g.* self- and teacher reports, interviews, observations, and traces of children's behavior) to provide deeper understandings of the development of SRL but also of the relationship between SRL and motivation in primary education classrooms. Mixed-methods studies are also needed to provide in-depth knowledge of how the events and activities that unfold in classrooms interact with children's ability-related perceptions and shape their subsequent engagement in self-regulation.

Finally, although SRL and ability-related perceptions have been shown to reciprocally interact, less attention has been paid directly to examining how classroom practices designed to support SRL might also enhance these perceptions and vice versa. Moreover, educators, children, and researchers should engage in meaningful collaborations so that the findings of future studies could benefit both the research and practical needs. The findings should provide

information and a deeper understanding for all parties involved in the study. Children should be provided with opportunities to confirm researchers' interpretations, which would provide them with opportunities to learn and understand their own actions, learning and development in classrooms. Educators should be provided with feedback about their classroom practices, which might enhance their understanding of young children's ability-related perceptions and SRL in their classrooms, and this in turn, might enhance the effectiveness of their practice in supporting children in these areas of development.

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Appendix A: Consent form for children and parents

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Tutkimuslupa

[Add date]

AGENTS - Lasten pystyvyyden ja toimijuuden tukeminen formaaleissa ja informaaleissa konteksteissa

Arvoisa lapsen huoltaja,

Teemme Suomen Akatemian rahoittamassa Agents-tutkimushankkeessa (*Towards childrens efficacious agency in formal and informal contexts*) tutkimusta, jossa olemme kiinnostuneet lasten oppimisesta ja kasvusta erilaisissa lapsuuden kasvuympäristöissä. Pyydämme Teidän suostumustanne lapsenne osallistumiseen tähän tutkimusprojektiin.

Tiivistelmä tutkimuksesta:

Agents-tutkimusprojektissa on tarkoituksena tutkia lasten hyvinvointia ja sitä sääteleviä mekanismeja lapsuuden formaaleissa ja informaaleissa kasvuympäristöissä. Agents-tutkimusprojekti toteutetaan osana laajaa Suomen Akatemian rahoittamaa SkidiKids tutkimusta. Tavoitteena on valottaa tekijöitä, jotka edistävät ja toisaalta estävät lasten itsesäätoistä toimintaa eri ympäristöissä. Aktiivisen toimijuuden ja siihen kytkeytyvien oppimisen taitojen avulla lapset voivat säädellä kykyään toimia aloitteellisesti ja sinnikkäästi erilaisissa haastavissakin tilanteissa.

Olemme edenneet tutkimuksessamme aineistonkeruuvaiheeseen, jossa tarkoituksena on videoida ja valokuvata oppilaiden toimintaa. Tutkimuksen empiiristä aineistoa käytetään moniin tarkoituksiin. Tutkimuksen videoituja ja valokuvattuja tilanteita hyödynnetään esimerkiksi lasten haastatteluissa. Myöhemmin tutkimuksessa on tarkoituksena kehittää menetelmiä ja välineitä, joiden avulla lapset ja heidän näkemyksensä otettaisiin paremmin huomioon.

Tässä tutkimuksessa lapset nähdään yhdenvertaisina tutkijoina, joiden keskeisimpinä rooleina ovat tutkimusmateriaalin tuottaminen ja sen tulkitseminen

Kerättävä tutkimusaineisto:

- Kyselylomakkeet
- Videoidut oppitunnit ja ryhmätilanteet
- Valokuvat koulusta ja kotoa
- Stimulated recall- haastattelut

Aineistojen käsittelyn luottamuksellisuus ja anonyymiteetti:

Aineiston käsittely on luottamuksellista ja tapahtuu mahdollisimman anonyymisti: (1) Aineisto muutetaan tunnusluvuiksi, jolloin oppilaan henkilöllisyyttä käsitellään tietyllä tunnuksella, ei henkilökohtaisesti etunimillä. (2) Aineiston käsittely tapahtuu siten, että esim. kaikki yksittäisten lasten haastattelut liitetään yhteen ja aineistoa käsitellään kokonaisuutena. (3) Kaikki mahdollisesti julkaisuissa esitettävä aineisto esitetään anonyymisti.

Yhteystiedot:

Mikäli haluatte lisätietoa tutkimuksesta ottakaa yhteyttä Prof. Sanna Järvelään (040-XXXXXX) tai sanna.jarvela@oulu.fi

Suostumus tutkimusaineiston käyttöön:

_____ **Suostun siihen**, että lapseni _____
osallistuu em. tutkimukseen

_____ **En suostu siihen**, että lapseni _____
osallistuu em. tutkimukseen

Pvm: _____

Huoltajan nimi: _____

Huoltajan allekirjoitus: _____

Appendix B: MASCS questionnaire (Child)

Multisource Assessment of Social Competence Scale

Name of child: _____

School and grade: _____

Date: _____

	Never	Rarely	Frequently	Very frequently
CO1. I offer help to other students				
CO2. I effectively participate in group activities				
CO3. I invite other students to participate in activities				
CO4. I am skillful in starting conversations with mates				
CO5. I cooperate with other students				
EM1. I know how to be a good friend				
EM2. I am sensitive to the feelings of others				
EM3. I show acceptance of other students				
IM1. I have "a short fuse"				
IM2. I have temper outbursts or tantrums				
IM3. I am easily irritated				
DI1. I tease and make fun of other students				
DI2. I argue and quarrel with peers				
DI3. I bother and annoy other students				
DI4. I act without thinking				

Note: CO=Cooperative skills, EM=Empathy, IM=Impulsivity, DI=Disruptiveness

Appendix C: MASCS questionnaire (Teacher)

Multisource Assessment of Social Competence Scale

Name of teacher:

Date:

School and Grade:

- 1) Add the name of the students in your classroom to the instrument
- 2) Evaluate the students in your classroom using the rating scale: 1=never, 2=rarely, 3=frequently, and 4=very frequently.
Areas of evaluation: CO=Cooperative skills, EM=Empathy, IM=Impulsivity, DI=Disruptiveness

CO1. Offers help to other students

CO2. Effectively participates in group activities

CO3. Invites other students to participate in activities

CO4. Is skillful in starting conversations with mates

CO5. Cooperates with other students

EM1. Knows how to be a good friend

EM2. Is sensitive to the feelings of others

EM3. Shows acceptance of other students

IM1. Has "a short fuse"

IM2. Has temper outbursts or tantrums

IM3. Is easily irritated

DI1. Teases and makes fun of other students

DI2. Argues and quarrels with peers

DI3. Bothers and annoys other students

DI4. Acts without thinking

Original articles

This doctoral thesis is based on the following original publications, which are referred to in the text by their Roman numerals (*Studies I–IV*):

- I Määttä E, Mykkänen A & Järvelä S (2015) Elementary school children's self- and social perceptions of success. *Journal of Research in Childhood Education*. In press.
- II Määttä E & Järvelä S (2013) Involving children in reflective discussions about their perceived self-efficacy and learning experiences. *International Journal of Early Years Education* 21(4): 309–324.
- III Määttä E, Järvelä S & Perry N (2015) Personal and contextual contributors to young children's activity-based perceived self-efficacy. *Scandinavian Journal of Educational Research*. Published online. URI: <http://dx.doi.org/10.1080/00313831.2015.1024161>.
- IV Määttä E, Järvenoja H & Järvelä S (2012) Triggers of students' efficacious interaction in collaborative learning situations. *Small Group Research* 43(4): 497–522.

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141. Puroila, Anna-Maija & Kaunisto, Saara-Leena & Syrjälä, Leena(Toim.) (2013) Naisen äänellä : professori Eila Estolan juhlakirja
142. Malmberg, Jonna (2014) Tracing the process of self-regulated learning – students' strategic activity in g/nStudy learning environment
143. Virkkula, Esa (2014) ”Soittaminen ammattilaisen kanssa on paras tapa oppia” : työpajaperustainen työssäoppiminen muusikoiden ammatillisessa koulutuksessa
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150. Rantanen, Antti (2014) Development of methodology for assessing counseling interactions : developing the Counselor Response Observation System and assessing applicability of heart rate variability to the measurement of client emotions during verbal reporting
151. Näykki, Piia (2014) Affective and effective collaborative learning : process-oriented design studies in a teacher education context
152. Mäki, Päivi (2015) Opettajana ja kehittäjänä : vertaismentorointiryhmässä kehittäjäopettajan ammatillista identiteettiä kertomassa
153. Räisänen, Sari (2015) Changing literacy practices : a becoming of a new teacher agency
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