

Motivation for Reading within the First Year of Formal Reading Instruction

by

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Thesis submitted in fulfilment of
the requirements for the degree of
PHILOSOPHIAE DOCTOR
(PhD)



Faculty of Arts and Education
The Norwegian Reading Center
2018

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ISBN: 978-82-7644-792-7

ISSN: 1890-1387

PhD: Thesis UiS No. 412

The successful, the venturesome, the sociable, the nonanxious, the nondepressed, the social reformers, and the innovators take an optimistic view of their personal capabilities to exercise influence over events that affect their lives. If not unrealistically exaggerated, such personal beliefs foster positive well-being and human accomplishments.

Albert Bandura, 1995

It's OK not to be like everybody else. Keep believing in yourself. Things worked out for me, after all.—I am the greatest. Who are you?

Zlatan Ibrahimović, 2011

Preface

“What drives our actions?” This big question has followed me—and perhaps also driven me—through the years that I have spent working on this thesis. Besides investigating this question theoretically, I have also carried it with me in my everyday life, whatever I have been up to. This means that I have very good reason for thanking my family, as I will soon do below. However, before I do that, I would like to describe a situation that really set me thinking about behavior, driving forces and motivation as a fundamental issue.

One summer evening when I was about halfway through my work on this thesis, I arrived late to a dinner party. When I reached the table, I noticed a pattern of actions that I recognized from earlier occasions. Along the left-hand side of the table, a number of guests were going through the motions of making conversation. On the right-hand side, the party was progressing differently: dynamically, characterized by laughter, happiness and enthusiasm. As the evening progressed, the same patterns became evident in attitudes, in conversations and in dancing, as well as through a lack of smiles and interest—or, rather, through a lack of interaction between these two components. On my way home from the party, back in analysis mode, I thought about why this should be so and whether the picture could have looked different. About whether characteristics such as commitment, interest and passionate joy really are potentials that can be brought to life and made to develop.

“What, then, makes six-year-olds want to read?” This is a practical question which really goes much deeper, although it does rest upon the question “What drives our actions?” While the scenario I just described concerns something different from what happens when first-graders learn how to read, on a fundamental level some of the mechanisms at play may actually be the same. This is to do with the idea that cautiously target-oriented hope, when interacting with interest and perhaps even a hint of passion, offers undreamed-of possibilities for development and skill performance.

Richard Ryan (2012) sums up motivational theory and research by saying that human actions are characterized by being energized and directed. Within the frameworks of the behaviorist and cognitive traditions, I will ask later on in this

thesis whether our motivation can be explained at a more fundamental level as driving forces and goals. One prerequisite for making such an assumption is the realization that both motivation and skills can be seen as potentials that always inherit the possibility for development and degeneration (Aristotle, 1934; Tønnessen, 2011). “You can become whatever you like, so long as you put in the work” is something I remember my father telling me as I was growing up. On this point, my father—probably unawares—was well in line with the state of the art in theories of motivation when it comes to the importance for goal attainment of putting in the effort and believing in yourself (e.g. Bandura, 1995; Sternberg, 2014; Dweck, 2017). However, even if effort has been important for finishing this project, this thesis would never have become reality without the generous contributions and encouragement of certain extraordinary people:

First and foremost, main supervisor Oddny Judith Solheim. You have my warm gratitude for excellent professional guidance, enthusiasm and support, from the first day I as a graduate student stepped into your office.

Co supervisor Jan C. Frijters, thank you for solid theoretical as well as statistical advices, and hospitality when I visited Canada.

Co supervisor Finn Egil Tønnessen, thank you for informative conversations, support and for sharing your massive knowledge of philosophy and theory.

Per Henning Uppstad, your willingness to always take the time to comment on text, discuss a problem, share your ideas or encourage me to follow mine, has been invaluable.

Njål Foldnes, thank you for sharing your statistical expertise and all patience with the cross-lagged modelling.

Also, I would like to thank the colleagues in the On Track research group: Kjersti Lundetræ, Zahra Esmaeeli and Åse Kari Hansen Wagner, for providing such unselfish, positive and constructive working environment.

Finally, I will express gratitude to my family: Bjørn Sigve, Julia and Haakon for all your patience, warm support and humor along the way.

Bente Rigmor Walgermo

Stavanger, May 2018

Summary

The present thesis empirically and theoretically explores motivation for reading in Norwegian first-graders during their first year of formal reading instruction (N = 1,141).

Early motivation for reading is conceptualized in this study as interest in literacy-related activities and reader self-concept. The study investigates the dynamics of motivation for reading and emergent literacy at school entry and at the end of the first grade. In addition, it explores the potential effects that a substantial increase in reading skill and participation in an early intervention may exert on the reader self-concept of students considered to be at risk of reading difficulties.

The results show that a few weeks into the first year of formal reading instruction, students generally have a strong interest in reading but that, even at school entry, the children with the poorest emergent literacy have a significantly weaker reader self-concept than their high-performing peers. Further, interest was found to moderate the association identified between emergent literacy at school entry and reader self-concept at school entry, meaning that students who had a strong interest in literacy also had a strong reader self-concept, independently of their actual level of emergent literacy.

What is more, investigations across the first grade using cross-lagged modeling as between early motivation and reading skill show there to be reciprocal relationships. Evidence was found of significant bidirectional relationships between reader self-concept and early reading skill and between literacy interest and reader self-concept within the first year of formal schooling. This suggests that relationships between reader self-concept and early reading skill start affecting children's reading development even before formal reading instruction begins. Further, stability was found in the students reading skills across the first grade and their literacy interest and reader self-concept were found to stay relatively stable from school entry to the end of the first grade. An intensive reading intervention carried out during the first grade was not found to affect reader self-concept when initial reader self-concept and the

increase in reading skill across intervention and control groups were controlled for.

Finally, the present thesis adds some reflections on how the phenomena of motivation and skill could be understood at a foundational level.

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1 Introduction

A half century of reading research has built on the fact that the development of reading skills is linked to motivation for reading (Alexander & Fox, 2004; Stanovich, 2009). Motivation is often considered a logical prerequisite for developing reading skills, given that written language—being an artifact—has to be taught, while the acquisition of spoken language is considered a natural process, presumably without a need for motivation of a similar kind. With regard to the early and perhaps most important phases of reading development, we need more knowledge about how early reading skill and motivational constructs develop and how they interrelate. The present thesis approaches this issue with an ambition to explore the dynamics of early motivation and reading skill empirically—and theoretically—at the time when Norwegian first-graders formally start learning to read. This particular time window is deemed significant by many distinguished researchers (e.g. Cunningham & Stanovich, 1997) for obvious reasons, given that the year curriculum-based reading instruction starts forms the foundation for students’ adequate reading skills and hence further academic and life achievements (Lonigan & Shanahan, 2001).

In line with Tønnessen and Uppstad (2015), I consider reading to be a skill, and more specifically: an interpretive skill. Within their framework, a skill is defined by a combination of automaticity and awareness. As there are varying degrees of automatizing and conscious monitoring, the combination of the two will vary depending on the text and the situation (Tønnessen & Uppstad, 2015, p. 49). As regards emergent literacy, this has been broadly defined as “the skills, knowledge and attitudes that are developmental precursors to conventional forms of reading and writing. These skills are the basic building blocks for how students learn to read and write” (Connor & Tiedemann, 2005, p. 1). Within this broad definition, I rely on measures of letter knowledge and phonological awareness as the most important precursors of later reading skill (Lonigan, Burgess, & Anthony, 2000). When I use the term early reading skills, I include both emergent literacy at school entry and reading skill at the end of the first grade.

The Norwegian curriculum centers on competence goals but does not require the use of specific instructional methods. In the case of reading, the first

competence goals are to be reached by the end of the second grade; there are no specific goals for the first grade alone. This two-year perspective gives teachers a large degree of freedom as well as responsibility when it comes to issues of content and progress. The students are not expected to know any letters when they start school. At the end of the second grade, the Norwegian curriculum expects them to have acquired basic reading skills. The goals for written communication include the ability to:

- read simple texts with fluency and comprehension on paper and screen;
- use their own knowledge and experience to understand and comment on the content of texts they read;
- write simple descriptive and narrative texts.

(Norwegian Directorate for Education and Training, 2013).

In order for students to acquire such skills over the first two years, it is clear that the first grade is vital for laying the foundation for written communication. This is so for all students, but perhaps the first year is the most decisive for those of them who enter school with poor emergent literacy and continue to have poor reading skills within the first grade. Students who display poor reading skills during their first year of formal reading instruction have been reported to have more than a 90 percent risk of still having poor reading skills later on (Chard & Kameenui, 2000). Additionally, previous studies show that, even within the first six months of the first grade, poor early readers report a weaker reader self-concept than their normal- and high-performing peers (Chapman et al., 2000; Morgan et al., 2008). Both self-concept and interest are considered important for students' learning and for the development of reading skills because of their relationships to achievement outcomes (Shavelson, Hubner & Stanton, 1976; Stanovich, 2009).

Later on in this thesis, I will return to—and elaborate in greater detail upon—the concept of early motivation for reading, which as operationalized here includes literacy interest and reader self-concept within the first year of formal instruction. Let me just mention that I rely upon Ainley's (2006) definition of "interest", where "interest is conceptualized as an affective state that represents students' subjective experience of learning; the state that arises from either situational triggers or a well-developed individual interest" (Ainley, 2006, p. 392). However, within the framework of this definition, I recognize that

“learning” involves not only formal instruction but also developmentally relevant literacy experiences that children have outside of the school context. As regards reader self-concept, the broader concept of “reader self-beliefs” refers more generally to performance-related beliefs rather than to the actual reading skill required to perform a specific task or activity. The two most studied components of students’ self-beliefs are perhaps self-efficacy and self-concept. In line with Bong and Skaalvik (2003), I see self-efficacy as relating to more task-specific beliefs and self-concept as relating to more general beliefs about one’s competence within a domain, in this case reading.

Students who consider themselves to be good readers will anticipate success in academic settings and often perform better at academic tasks than students who exhibit poor self-beliefs and hence anticipate failure (Murphy & Alexander, 2000; Zimmermann, 2000). Children who are driven by interest often devote more time and effort to reading tasks and often feel more competent as readers (Ecalte, Magnan & Gibert, 2006). Thus, literacy interest and reader self-concept are motivational constructs with importance for students’ learning and for the development of reading skills.

Students who perform poorly at an activity have been found to protect their overall self-image by reducing the level of value or interest and emotion that they assign to tasks associated with poor performance (Covington, 1998; Eccles, Wigfield, & Schiefele, 1998; Harter, 1982; Wigfield et al., 1997). In the case of reading, such a reaction gives strong cause for concern, because learning to read is the first academic task encountered in school and because early struggling readers often need an extensive amount of time on task in order to acquire adequate reading skills and to catch up with their peers. Students’ failure in learning to read will often entail severe consequences for their overall self-image (Bandura, 2002; Stanovich, 2009). Against this background, gaining a stronger interest in literacy and a stronger self-belief in themselves as readers might be especially important for the reading development of struggling students within their first year of formal schooling.

The existing literature on older students is replete with statements about the interrelated development of reading skill and reading motivation (see Green, Nelson, Martin & Marsh, 2006), indicating that reader self-concept is related both to students’ interest in reading and to their actual reading skill (Wigfield

& Guthrie, 1997). A variety of constructs have been used when investigating the reading motivation of such older students (e.g. learning goals, self-efficacy), but the range of constructs seems more restricted in the case of the youngest readers. As will be discussed in greater detail later, the constructs of literacy interest and reader self-concept seem to be the most theoretically relevant for students in their first few years of school and also seem to be the most commonly used motivational constructs in studies on early readers. The broader palette used for older students has come about through a large number of studies, and more research is required in order to understand the dynamics of reading skill and motivational beliefs in younger students as well.

As regards the present thesis, the underlying assumption is that the time window chosen—the first year of formal reading instruction—will bring us closer to understanding this fundamental issue. There is at present a lack of understanding regarding these dynamics in younger students. For example, Marsh and Craven (2006) state that, to have long-lasting effects on students' reading performance, reading interventions should also target maladaptive motivational beliefs and attributions in addition to skills. However, this claim builds on documented reciprocal relationships between self-concept and skill in older students (Valentine, Dubois & Cooper, 2004; O'Mara et al., 2006). Studies of such reciprocal relationships within the first grade will contribute to our understanding of how intervention programs may help enhance both reading skill and reader self-beliefs.

Once we have obtained such a more nuanced picture of early readers, we will also need to find out whether the effect of early reading interventions could be increased by having motivational beliefs more explicitly targeted, in addition to the actual reading skills.

Given that the present thesis aims to contribute to the international research literature, there are a few peculiarities of the Norwegian educational context that need to be emphasized. Most Norwegian children starting school will have attended the *barnehage* (\approx kindergarten) from the age of one. Approximately 95 percent of Norwegian children (1–5 years) attend the *barnehage* full-time (35 hours a week) (Norwegian Directorate for Education and Training, 2013). This is a substantially higher enrollment percentage than, for example, in the United States, where only approximately 60 percent attend full-day programs (Snyder,

2014). Further, the official recommendation for literacy activities was until 2017 in the Norwegian barnehage to be of an interactive and authentic nature, with the frequency of participation in such activities based on the individual child's own initiative. Formal reading instruction in Norway starts in the first grade, and 96.7 percent of primary-school students are enrolled in public (i.e. non-private) schools (Norwegian Directorate for Education and Training, 2013). Norwegian has a semi-transparent orthography, meaning that it is more regular than English but less regular than Finnish. In sum, this means that when making comparisons with international educational contexts, it must be taken into account that Norwegian school starters have not received any formal reading instruction, even though the majority of them have already learned some letters and a few already know how to read. Given that both literacy interest and reader self-concept are formed by children's prior experience with literacy situations and with learning how to read, such differences between educational systems in the amount of formal instruction received before school entry are important to keep in mind when comparing results across borders.

The present study sheds light on the dynamic nature of the interplay between motivation and skills. In my work, I have found that the idea of seeing reading skill and reading-motivational components as potentialities is fundamental to disentangling this complex interplay (Aristotle, 1934; Tønnessen, 2011). According to Tønnessen, all potentialities share the characteristic that they are dynamic entities which are both acquired and develop through realization. Hence a potentiality can always be realized to a greater extent. Given the significant effect on reading behavior of literacy interest and reader self-concept, the realization of one's full reading-skill potential requires a strong literacy interest as well as a level of reader self-belief that slightly exceeds one's actual level of reading skill (Bandura, 1995).

1.1 Goals

The aim of the present thesis concerns the dynamic interrelations of early reading skills, literacy interest and reader self-concept during the decisive time window that the first grade represents. "Dynamic" here refers to the fact that three constructs are measured at two time points. The goals guiding the research are the following:

Primary goal

To extend our knowledge about motivation for reading in the early phases of reading development by investigating motivational beliefs and their relationship with reading performance within the first year of formal reading instruction.

The following secondary goals inform the primary goal:

- To investigate the status of students with poor emergent literacy and their peers with regard to motivation for reading, literacy interest and reader self-concept at the beginning of formal reading instruction.
- To explore the dynamics of early reading skill, literacy interest and reader self-concept across the first year of formal instruction.
- To explore whether experiencing an increase in reading skill and receiving an early reading intervention affects the reader self-concept of students considered to be at risk of reading difficulties.

The three articles included in the present thesis all investigate various aspects of the skill–motivation relationship within the first grade. The first article explores the dynamics of emergent literacy and motivation for reading at the point where Norwegian children enter school and start formal reading instruction. The second one investigates cross-lagged relationships between reading skill and motivation within the first grade. The third study focuses on poor emergent readers by investigating the extent to which reading motivation at the end of the first grade is associated with an increase in reading skill and with participation in an early preventive reading intervention.

Figure 1 shows schematically how the articles are concerned with various aspects of the dynamics of motivation and reading skill within the first year of formal reading instruction: at school entry, across the first grade and at the end of the first grade.

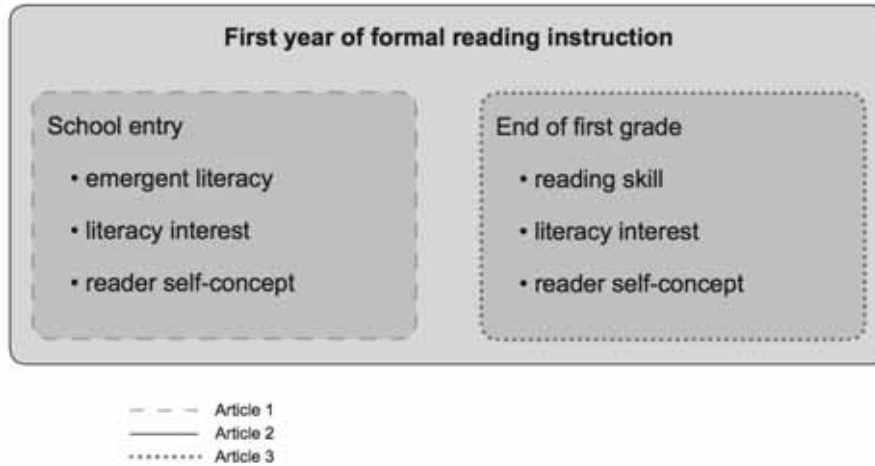


Figure 1 – Measures and time points for the articles included in this thesis.

1.2 Articles included in this thesis:

- Article I Walgermo, B. R., Frijters, J., & Solheim, O. J. (2018). Literacy interest and reader self-concept when formal reading instruction begins. *Early Childhood Research Quarterly*, 44, 90–100. doi.org/10.1016/j.ecresq.2018.03.002
- Article II Walgermo, B. R., Foldnes, N., Uppstad, P. H. & Solheim, O. J. (2018). Developmental Dynamics of Early Reading Skills, Literacy Interest, and Readers' Self-Concept Within the First Year of Formal Schooling. *Reading and Writing*. [doi/org/10.1007/s11145.018.9843.8](https://doi.org/10.1007/s11145.018.9843.8)
- Article III Walgermo, B. R. (in process). First-grade reader self-concept: potential interactions with skill and early intervention

2 Theoretical background

2.1 Motivation

The question raised in the opening paragraph of this thesis—how early reading skill and motivation develop and interrelate—is rather a fundamental question in that it refers to the parameters of motivational development itself. Motivation research has largely been concerned with what makes people do what they do, i.e. the drives and reasons behind peoples’ actions and thoughts (Ryan, 2012). This focus of mainstream motivation research does provide important pieces of the picture, but the advancement of motivation research is likely to involve a more extensive search for missing pieces. One way of adding such pieces may be to extend our understanding of the dynamics of early motivation and reading-skill development.

Motivated behavior can be observed in terms of the amount of energy or the intensity of engagement that people bring forth in different situations (Wigfield et al., 2015). Ryan (2012) identifies two main characteristics of motivational behavior: it is energized and directed. I find that these characteristics can be explained by applying insights from the behaviorist and cognitive traditions, respectively. While behaviorist theories explain how our motivation is energized by our driving forces such as feelings, attitudes and drives, the cognitive aspect of motivation is related to the directedness of our behavior—our goals and motives. Literacy interest and reader self-concept are cognitive constructs that are particularly important for reading development because of their behavioral outcomes (e.g. reading frequency). Within this framework, the present thesis touches upon fundamental questions of motivation for reading in early phases of children’s reading development.

In the early 20th century, it was suggested that drives, needs and reinforcements were the primary sources of the energy we devote to specific ends. The development of this line of theory is evident through the behaviorist traditions (Hull, 1943; Tolman, 1951), via psychodynamic theories (Freud & Strachey, 1964).

While the psychoanalytic theories of Sigmund Freud were beyond doubt brilliant, he was himself aware that his research was limited to the foundations,

to the deepest and lowest dimensions explaining our nature. In one of his letters to Ludwig Binswanger (with whom he corresponded for over thirty years), Freud stated that he had never ventured beyond the basement and ground floor of the human construction (Binswanger, 1956) and stressed that this discussion about the nature of our behavior centers on various purposes and may take centuries to sort out (there is much evidence to suggest that he was in fact right). The inadequacy of both the behaviorist and the psychodynamic attempts to grasp motivational phenomena was emphasized by Robert White in his review *Motivation Reconsidered* (1959), where he criticized these two dominant theories. White claimed that, while there were numerous and well-crafted criticisms of the then-prevailing views of psychology (e.g. Morgan, 1957), his predecessors' research had far too rarely led to a clear reconceptualization within the field. In White's opinion, our drives and instincts alone cannot explain the energy driving our motivation. An important source of our motivation is reflected in our competence in dealing with the environment; this is what he calls effectance motivation. Unlike our drives and instincts, effectance motivation is a characteristic that is neither inherent nor acquired through maturation. From this point onward, a cognitive school of thinking gradually supplanted both the behaviorist and the psychoanalytic traditions—and has endured since. Within this cognitive school, Viktor Frankl (1985; 2014)—with his research at the boundary between psychotherapy and philosophy—represents an interesting contribution to the debate about humans' driving forces. Frankl's theories shift the focus from individual drives and needs, as in the psychoanalytic tradition, to a more positive and constructive highlighting of humans' search for meaning. Therapy within Frankl's framework involved the construction of meaning in the meeting between the therapist and the patient rather than focusing on the patient's past experiences. Also, willpower is crucial: when we are no longer able to change a situation or conditions, it is essential that we are able to change our attitude (Frankl, 1985). In addition to meaning, Frankl claims that hope—a factor closely related to motivation, is one of our strongest driving forces.

It is clear from Richard Ryan's *Oxford Handbook of Human Motivation* (2012) that a cognitive dominance can be seen in the prevailing theories of motivation today. Within the cognitive tradition, attributions, preferences or expectancies are used to predict the direction and persistence of our behavior. The cognitive

tradition thus explains how our goals help us focus attention, even by describing goals as the servants of our motives (Ryan, 2012). A cognitive dominance can also be identified when it comes to the constructs used in research in the more specific field of reading motivation: constructs such as self-concept, self-efficacy, expectancy–value, goal theory, interest and task value all originate from the cognitive tradition. This dominant position held by cognitivism in present-day research into both motivation and skill has been problematized with regard to the role of behaviorism (Tønnessen & Uppstad, 2015); I will return to that discussion later on in this thesis.

In a review of reading research and practice over the past fifty years, Alexander and Fox (2004) describe the history of reading research through eras representing different perspectives on learners and learning. Interestingly, they refer to the period of reading research between 1996 and the present as the era of engaged learning, claiming that the defining characteristic of this period is that the understanding of reading as either a cognitive, esthetic or sociocultural activity is replaced by a view of reading development as a process where different components are actively or interactively involved. Alexander (2004) exemplifies this by conceptualizing, in her Model of Domain Learning, the reader as motivated and knowledge oriented.

2.1.1 Motivation for reading

Investigations of motivation for reading have used a variety of different motivational constructs (for reviews, see Conradi, Jang & McKenna, 2014; Schiefele et al., 2012). The most acknowledged and most frequently used questionnaire for assessing cognitive aspects of motivation for reading in older elementary-school children is probably the Motivation for Reading Questionnaire (MRQ) (Guthrie & Wigfield, 1997). The MRQ consists of no fewer than eleven components derived from constructs from different theories of reading motivation, such as goal theory (see Pintrich, 2000) and self-determination theory (see Ryan & Deci, 2000).

When it comes to motivation for reading in the youngest students, however, a review of the research literature shows that rather fewer constructs are in play. This may be because the youngest readers do not have enough experiences with reading for some of the constructs in use for measuring motivation among older

students to make sense. For the first years of school, the constructs of interest and self-concept seem to be some of the most extensively studied ones (e.g. Frijters, Barron & Brunello, 2000; Chapman & Tunmer, 2000; Morgan & Fuchs, 2007). There are also conceptual reasons why existing research has focused on these two constructs: while both interest and self-concept are cognitive constructs, their importance becomes evident through their behavioral outcomes, i.e. their effect on concentration, persistence and choices in reading situations. Students who have positive feelings toward reading tasks and activities (interest) and who have strong beliefs in their own reading abilities (self-concept) will more often participate in literacy activities, they endure longer when encountering challenges in their reading and they read more often than other students (Stanovich, 2009; Morgan & Fuchs, 2007). We know that to read often is of great value as children who read frequently grow into more skillful readers than their peers who read less (Stanovich, 2009; Guthrie, Schafer & Huang, 2001; Ecalte, Magnan & Gibert, 2006).

The constructs of reader self-concept and literacy interest reflect different theoretical traditions that generally follow two lines of research. These lines of research are closely related to the central components of the expectancy–value theory of achievement (Eccles, 1983; Wigfield & Eccles, 1992; Wigfield, 1994). The expectancy–value framework is built on Atkinson’s original definitions from 1957, where expectancy is defined as individuals’ expectancy of whether their performances will be followed by success or failure, while value is defined as how attractive it will be to succeed or fail at a task. Within the expectancy–value framework, these definitions have been further elaborated, but the basic idea is that children’s achievement, persistence and choice of tasks are strongly influenced by their expectancy for success or failure at a given task and by the value that they assign to succeeding at that task (Eccles, 1983).

2.1.2 Self-concept

The first of these two lines of research deals with students’ perceptions of their own reading skill. For the youngest readers, it is most commonly operationalized as reader self-concept (e.g. Chapman, Tunmer & Prochnow, 2000; Morgan & Fuchs, 2007). Marsh and Shavelson (1985) claim that,

historically, self-concept is a self-descriptive construct based on different forms of evaluations of and feelings about oneself. From a phenomenological perspective (see e.g. Rogers, 1951), self-concept was defined as a global form of self-perception, related to our self-esteem. However, self-concept in this overall sense was not found to be related to academic achievement (Wylie, 1968). When researchers began to reconceptualize the self-concept construct hierarchically, domain-specific self-concepts were introduced. One of these researchers was Harter (1978), who places the global self-concept at the top of the hierarchy, the general academic self-concept in the middle and the domain-specific academic self-concepts at the bottom. The domain-specific self-concepts, such as the reader self-concept, highlight self-esteem reactions through questions calling for self-evaluation, such as, in the present study, “How good are you at reading?” and “Do you find learning to read to be difficult?” In contrast to self-concept items that target self-beliefs within a certain domain, self-efficacy items are solely concerned with expectations about performance at particular tasks (Bong & Skaalvik, 2003). One example: “How certain are you that you can write your own name correctly?” While self-efficacy and self-concepts within the same domain are often strongly correlated, it is known that some students have beliefs about their competence at a specific task that exceed their self-concept for the domain in question (Bandura, 1997). According to Shalveson, Hubner & Stanton (1976), a person’s self-concept is formed through experiences with, and interpretations of, his or her environment (e.g. comparison with others). A person’s self-perceptions are influenced, in particular, by evaluations of significant others’ reinforcements and attributions. Given that self-efficacy for reading-related tasks is part of the broader reader self-concept, some researchers see self-efficacy as a precursor to students’ self-concept within academic domains (Bong & Skaalvik, 2003).

2.1.3 Interest

The other motivational construct targeted in the present thesis is literacy interest. This construct can be related to the tradition of effectance motivation (White, 1959) which reflects the idea that people do not necessarily engage in activities because they want to learn, but rather because they want to feel competent. The construct of effectance was introduced by White (1959) as a direct consequence of the fact that

instincts and drives had an inadequate ability to explain the part of our behavior that is playful and exploratory in nature as well as directed, selective and persistent in environmental interactions. These kinds of activities are considered to be motivating in their own right, and the feelings acquired by solving such tasks are characterized by White as feelings of efficacy; this shows how the construct is also related to self-perception theory. However, as the feeling of competence can be derived only from relatively unfamiliar tasks, the search for it will repeatedly lead individuals into new learning situations. Knowledge acquisition and skills development are considered side effects of a person's involvement in enjoyable tasks or activities. Along these lines, children who enjoy tasks that have the potential for learning outcomes are considered to be intrinsically motivated.

Within the expectancy–value framework, Eccles (1983) introduced attainment value as the importance of doing well at a given task, while intrinsic value is associated with the enjoyment felt when performing a task. Here we can see a close relationship between intrinsic value and intrinsic motivation (Deci & Ryan, 1985). Further, intrinsic motivation (Deci, Vallerand, Pelletier, & Ryan, 1991; Gottfried, 1990) overlaps with the related concepts of task value (Eccles, 1983) and interest (Schiefele, 1996) in that all three concepts share the assumption that a person is drawn to a task for reasons inherent to the task, independently of any future consequences. Intrinsic motivation, task value and interest have all been studied with a view to explaining the driving forces at work in learning situations related to reading (e.g. Ryan & Deci, 2000; Bong, 2001; Nurmi & Aunola, 2005), but literacy interest seems to be one of the most studied constructs of reading motivation when it comes to the early phases of reading development (e.g. Frijters et al., 2000; Baker & Scher, 2002; Baroody & Diamond, 2016). In the present thesis, I rely upon Ainley's (2006) definition of "interest": "Interest is conceptualized as an affective state that represents students' subjective experience of learning; the state that arises from either situational triggers or a well-developed individual interest" (Ainley, 2006, p. 392). However, within the framework of this definition, I take care to recognize that "learning" involves not only formal instruction but also developmentally relevant literacy experiences that children have outside of the school context.

2.2 The concept of early motivation for reading

Although the concepts of self-concept and interest build on different theoretical traditions and assign different causes to reading behavior, there is reason to believe that these two cognitive components of reading motivation are in fact associated with each other both empirically and conceptually (e.g. Wigfield & Eccles, 1992; Spinath & Spinath, 2005). For this reason, the present thesis conceptualizes these two components as one overall factor, using the term early motivation for reading.

The issue of the nature of the relationship between interest and self-concept has been approached in different ways in the literature. Within the framework of the conceptual review by Schiefele et al. (2012), interest, attitude and values are defined as motivational variables, while reader self-beliefs (self-efficacy and self-concept) are considered motivational prerequisites—necessary conditions that must be fulfilled before students can be considered to be, say, interested in reading. This theory also proposes that students need to develop some sort of self-concept related to reading or literacy activities in order to establish an interest in reading. Intriguingly, other theoretical schools see the relationship between interest and self-concept as exactly the opposite. In the research into interest and engagement carried out by Renninger and Hidi (2016), self-beliefs (e.g. self-concept and self-efficacy) are seen both as a predisposition and as a cognitive motivational component—a psychological state—that exists in, or is the sum of, personal and environmental characteristics (Renninger & Hidi, 2016). Previous research has focused on either one of these factors, but by far the greater part of this research has dealt with interest as a psychological state.

Interest conceived of as a psychological state is characterized by increased attention, effort, affect and concentration when engaged. Renninger and Hidi (2016) claims that it is when defining interest as a psychological state, a motivational variable, that it becomes possible to make a distinction between momentary situational interest and more continuous individual interest, characterized by reengagement over time. This is because the understanding of interest as a precondition does not entail the momentary situational interest. As an example, in Alexander's Model of Domain Learning (2004), situational interest is considered to be most important in earlier phases of development

before states where individual interest and more mature skills are established. Taken together, these aspects describe an approach to interest development where situational interest may trigger the development of individual interest.

2.3 Previous empirical findings in the field of early motivation for reading

When reviewing previous research into reader self-concept and interest in reading during early phases of reading development, I found the studies mentioned below to be of key relevance to the time window targeted in the present thesis. These are studies investigating reader self-concept and interest within the first grade as well as studies focusing on how preventive reading intervention influences students' early motivation for reading.

Measuring reader self-concept six months into the first grade, Morgan and Fuchs (2007) found that poor readers reported a weaker reader self-concept than their peers. Further, teachers in that study reported the poorest readers to be less intrinsically motivated for reading, more task avoidant during reading instruction and less likely to practice independent reading. Despite an obvious improvement in those poor readers' reading skill, the study (which was an intervention study) found no improvements at the overall level in children's reading motivation (reader self-concept) nor any increased frequency of reading. One reason why such an increase in actual reading skill may not be accompanied by a gain in motivation could be, according to Bates, D'Agostino, Gambrell and Xu (2016), that motivation/self-concept was not directly targeted in the interventions. Bates et al. (2016) demonstrated how a preventive first-grade intervention that specifically targeted aspects such as students' interest and reader self-efficacy led to robust gains not only in the students' reading skill but also in their motivation for reading.

In a study by Chapman, Tunmer and Prochnow (2000), reader self-concept and reading attitude were measured at an earlier stage of the first grade than in the study by Morgan and Fuchs (2007). Chapman et al. (2000) found poor early readers to have a weaker reader self-concept than their peers both at the beginning (seven weeks into formal reading instruction), and at the end of the first grade—and this picture actually remained unchanged when the students

were tested again midway through the third grade. The results from that study also showed that by the third grade, poor readers who had started out with a more negative self-concept not only still reported a weaker reader self-concept than their peers but also claimed to like reading less than children with a strong or average reader self-concept. The poorest readers claimed to be less interested in reading at all measuring points. The study was based on the Reading Self-Concept Scale for elementary students designed by Chapman and Turner (1995). That scale also includes an attitude toward reading subscale. The nature of both the attitude items (e.g. “Is it fun for you to read books?”) and the self-concept items (e.g. “Do you think you read well?”) suggests a close relationship with literacy interest and reading self-concept as measured in the first grade in the present thesis.

In a study by Nurmi and Aunola (2005), reading task value—defined as children’s interest in different subjects such as reading—was investigated during the first school years. Children’s reading task value reflected changes in their feeling of competence with respect to the subject in question. On the basis of this finding, the Finnish researchers suggest that task value (i.e. interest) may be a driving force behind changes in children’s self-concept during their first years of school. Nurmi and Aunola also found early reading-skill level to be unrelated to reading task value in the first grade, a finding which is in line with that of Baker and Scher (2002) to the effect that American first-graders (five- and six-year-olds) generally took a positive view of reading.

As children progress through the school years, there seems to be a substantial correlation between their development of interest, self-concept and reading skill; some studies even show reciprocal relationships between these constructs (Marsh, Trautwein, Lüdtke, Köller & Baumert, 2005; Harackiewicz, Durik, Barron, Linnenbrink-Garcia & Tauer, 2008). However, we know less about these relationships in the youngest readers. The nature of the relationship—of the developmental dynamics between children’s reading skill, literacy interest and reader self-concept—has consequences for, and is to some degree affected by, reading behavior. Among Finnish first-graders, Onatsu-Arviolommi and Nurmi (2000) and Onatsu-Arviolommi, Nurmi and Aunola (2002) found that children with lower levels of early reading skill reported negative developmental strategies related to reading. In both studies, task-avoidant behavior was found to reduce the subsequent improvement in reading skill.

However, only in the study by Onatsu-Arvilommi et al. (2002) did low levels of reading skill actually increase subsequent task-avoidant behavior. In line with the findings of Onatsu-Arvilommi (2000; 2002), Eklund, Torppa and Lyytinen (2013) found that Finnish second-graders who were at risk of reading difficulties or had poor early reading skills also tended to read less and to engage more in avoidance of reading tasks than their not-at-risk classmates. Eklund et al. (2013) concluded that a lack of task avoidance functions as a protective factor in early readers at risk of developing reading difficulties.

Taken together, prior studies indicate that even within the first year of formal instruction, poor emergent literacy seems to be associated with a weaker reader self-concept and increased use of task-avoidance strategies. When it comes to interest and to the liking of reading and literacy activities, the picture emerging from previous research is more nuanced. Prior studies in the field reporting on early preventive reading interventions and reader self-beliefs are scarce, but the findings from the studies by Morgan et al. (2007) and Bates et al. (2016) may indicate that interventions should explicitly target self-beliefs in order to attain positive outcomes. These findings are confirmed in a recent review by Unreau et al. (2017) of studies specifically targeting students' reading self-efficacy. This review finds that independently of study design, when reading self-efficacy is specifically targeted in interventions, it is malleable and can be changed.

3 Methods

3.1 Participants

The three articles included in this thesis are based on data from the ongoing group-randomized controlled “On Track” trial led by the Norwegian Reading Center. The main aim of the project is to reduce the incidence of reading difficulties by early identification of at-risk students and intensive interventions for this group of students. The On Track project follows students from school entry until October in the fifth grade (Lundetræ, Solheim, Schwippert & Upstad, 2017). The articles in the present thesis are based on data from the screening at school entry (T1) and from the post-test in April in the first grade (T2) (see Figure 2).

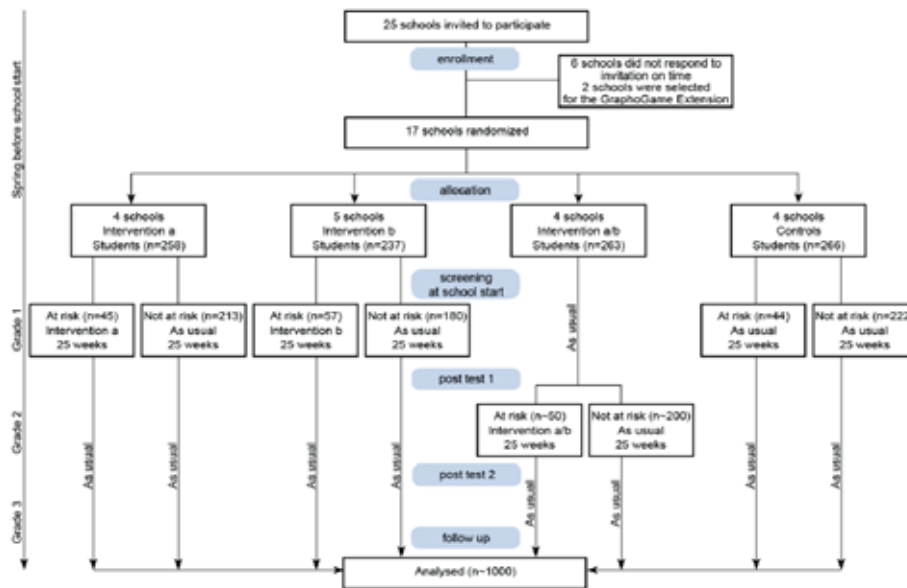


Figure 2 – Design of the of the On Track project

The On Track sample is a convenience sample of 19 primary schools in the western part of Norway, within close traveling distance of the Norwegian Reading Center. Given that the On Track included an intervention, there was a need for close contact with the schools involved. Schools that met the following two conditions were recruited: (1) more than 40 children were expected to be enrolled in the first grade in 2014; and (2) the school's score on the national reading tests had been close to the national mean (2.0 ± 0.1 on a scale from 1 to 3) in two of the three previous years. A total of 1,199 students were enrolled in the study across the 19 schools when they entered the first grade in August 2014. Of those, 97.7 percent obtained their parents' consent for participation, meaning that the sample consisted of 1,171 children (50.8% girls; mean age: 6.15 years). Of those children, 13.2 percent had no parent who spoke a Scandinavian language at home and 18.4 percent had a mother and/or father who self-reported reading difficulties. Further, 96.6 percent of the children had attended the barnehage (\approx kindergarten) before starting school. All students were screened two to three weeks into the first grade and retested at the end of the first grade by trained testers. This means that the present thesis is based on measures from the On Track project within the first grade only.

3.1.1 Article I

The first study (Literacy Interest and Reader Self-concept when Formal Reading Instruction Begins) included the whole sample ($N = 1,171$) of students who participated in the On Track project when starting the first grade.

3.1.2 Article II

The second study (Developmental Dynamics of Early Reading Skills, Literacy Interest and Reader Self-Concept within Grade 1) included the whole sample of students who participated in the On Track project both at time point 1 and at time point 2 ($N = 1,135$). A total of 36 students dropped out due to sample attrition, as they had left their respective schools between school entry and the end of the first grade.

3.1.3 Article III

The third study (First-Grade Reader Self-Concept: Potential Interactions with Skill and Early Intervention) was based on the same sample as the second study. First, the entire sample (N = 1,135) was used to investigate reader self-concept in readers who, at school entry, were considered to be at risk of reading difficulties, as compared with the rest of the sample. Further, to investigate whether a change in risk status (no longer considered to be at risk of reading difficulties) could neutralize differences in reader self-concept as observed at school entry (between at-risk students and their not-at-risk peers), the 836 students who were not considered to be at risk at any time during the first grade (never-at-risk) were compared with those students who were deemed to be at risk at both time points (still-at-risk) (n = 79) and with the students who had left the at-risk group by the end of the first grade (no-longer-at-risk) (n = 133). Finally, it was also investigated whether receiving an intensive reading intervention (n = 92) explained any additional variance in reader self-concept after change in risk status had been controlled for.

3.2 The On Track intervention

A randomized sample of the students categorized as being at risk of reading difficulties within the project (n = 92) participated in the On Track intervention (Lundetræ et al., 2017). The intervention started after seven weeks of formal instruction and included four weekly 45-minute sessions over a period of 25 weeks. While the at-risk students received the intervention, the remaining students in their respective classes were divided into subgroups for literacy training in reading and writing at different stations. The intervention was led by a teacher at the respective school who had received special training. A teacher's manual with a detailed description of the intervention program was developed as part of the project. Each of the 100 intervention sessions consisted of four ten-minute elements dealing with ABC, Guided Reading, Free Spelling and Shared Reading. For more details of the intervention program, see Lundetræ et al. (2017).

3.3 Procedure and measures

In the following, a description is given of the measures used in the empirical studies of this thesis, including measures of students' literacy interest, reader self-concept, emergent literacy and reading skill. It is also described how the at-risk indexes used at school entry and at the end of the first grade were designed and what measures they included.

Given the developmental transition that children most often experience during their first year of formal instruction, it was assumed that their reading skills would improve considerably between the two time points when their early reading skills were assessed. For this reason, different measures were used at those time points. The measures of literacy interest and reader self-concept were also different. At T1, the interest items focused on situations that children are likely to experience before formal reading instruction and within the first two weeks of formal instruction. At T2, the items were instead related to experiences with their own independent reading in school and at home.

For reliability estimation, I found Guttman's λ_2 to be the most expedient estimator because the performance of λ_2 in samples of this size reduces the amount of bias in the reliability estimate (Revelle & Zinbarg, 2009; Sijtsma, 2009; Zinbarg, Revelle, Yovel, & Li, 2005).

3.3.1 Measures at school entry (T1)

Procedure

The participating students were tested individually at their respective schools during a period of three weeks. All 18 testers were experts in the field of reading education and individual testing. Prior to data collection, all testers received six hours of training in administering this specific test battery. All tests were administered using a Lenovo Yoga Tablet 10 running Android 4.2. The students' responses were scored and automatically recorded on the tablets.

Measures of emergent literacy

To measure "emergent literacy" at T1, measures of phonological awareness and letter knowledge were used.

Letter-sound knowledge. The students' letter-sound knowledge was measured using a matching test. Each item on the test started with the auditory presentation of a letter sound. Then the student was asked to indicate which one of four letters appearing on the screen matched that sound. Upper-case letters were used on the assumption that they would be more familiar to the students at school entry. Guttman's λ^2 for the 15 items included in the letter-sound measure was .85.

Phonological awareness. The test included two types of tasks intended to measure phonological awareness: phoneme isolation and phoneme blending. Both subtests increased in difficulty and were terminated after two successive errors—this was the result of weighing the need for precise information against ethical considerations (such as forcing students with poor emergent literacy to endure a large number of tasks that were too difficult for them). Hence the duration of these tests differed between students, which may have influenced the estimation of reliability in that students with the poorest performance would all have the same score (zero) on the last items of the tests—in addition to a probable artificially high alpha.

The phoneme-isolation items measured the ability to identify the first sound of an auditorily presented word. The students were asked to isolate and pronounce the first sound of eight monosyllabic words representing common objects. There were two demonstration tasks. The first task used the following script, "In the picture you can see a dog. The very first sound of the word dog is d. Can you say dog? What is the first sound of dog?" In the second demonstration task, the tester named an object and then asked the student to say the first sound of the word, using the following script, "In the picture you can see a cat. What is the first sound of cat?" Corrective feedback was given during the demonstration tasks. Once the student performed the demonstration tasks correctly, the actual test began. Testers used the same script as in the second demonstration task but refrained from providing any corrective feedback. Guttman's λ^2 for the eight items of the phoneme-isolation task was .94.

The second phonological-awareness task included in the test battery was a forced-choice task measuring phoneme blending. The children were required to combine phonemes, presented to them auditorily and in correct order (e.g. /b/ /i/ /l/), to assemble a word (bil, meaning 'car' in Norwegian). In order to

ensure equal time lags between the sounds presented, the phoneme sequences were prerecorded on the tablets so that each phoneme sequence was presented in an identical way to all the children. Guttman's λ^2 for the eight phoneme-blending items was .87.

Measures of literacy interest and reader self-concept

Given that the study design involved measuring children's interest at a very early stage of the first grade, it seemed unlikely that their teachers would already have learned enough about the individual students' level of interest and reader self-concept to be able to provide accurate reports. Hence it was decided to obtain the data directly from the students. The measure of motivation used, which includes two successive binary choices with picture support, is based on studies using an acknowledged self-report methodology (Frijters et al., 2000) and a format adapted from the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter, 1982; Harter & Pike, 1984). For the present study, the items were adapted to suit a Norwegian literacy context and the medium of administration was changed from paper to tablet computers.

While Frijters and colleagues (2000) used this format exclusively to measure literacy interest, we expanded it to include reader self-concept using the same assessment format (McTigue, Solheim, Walgermo, Foldnes & Frijters, resubmitted for publication). In designing the self-concept items, we focused on linking those to be used at school entry to the students' perceived difficulties within their experiences of learning letters and learning how to read as well as comparison with classmates. The items intended for the end of the first grade dealt with the students' feelings of competence in independent reading situations and comparisons with classmates' actual reading skill. For a complete overview of the items used to measure early motivation for reading in this study, see Table 1. For each item, the computer screen was first divided into two parts. The left-hand side showed a picture of a child who is engaged in a reading activity. On the right-hand side, a happy face and a sad face were shown next to each other. The tester orally presented the following script, "This girl [or boy, as appropriate] likes to visit the library [pointing at the happy face]. This girl does not like to visit the library [pointing at the sad face]. Which girl is more like you?" The student then chose one of the faces by touching the

screen. If the student chose the happy face, the unhappy face disappeared and two circles—one small and one large—appeared below the happy face, whereupon the tester presented the following script, “Do you like to visit the library a lot [pointing at the large circle] or just a little bit [pointing at the small circle]?” See figure 3.

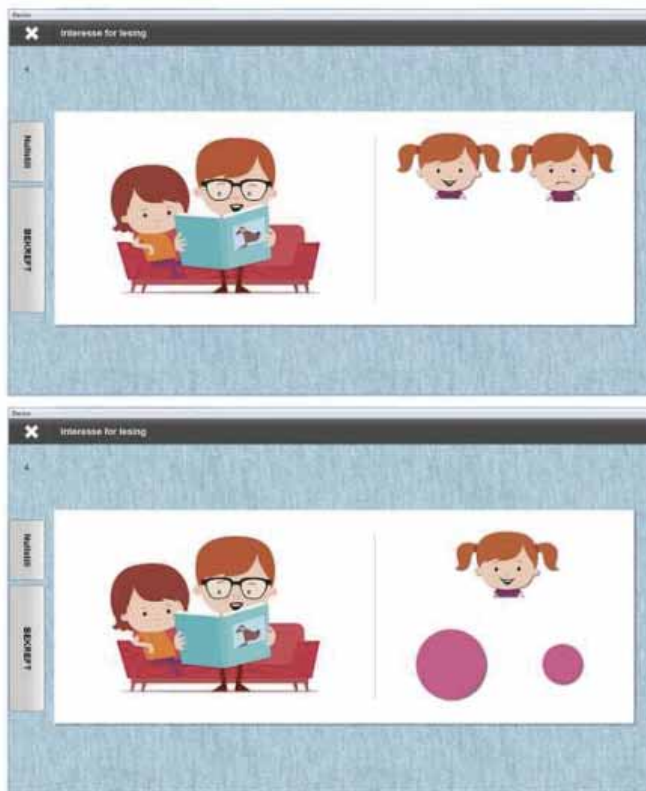


Figure 3 – Item example literacy interest and reader self-concept

Alternatively, if the student chose the sad face, the happy face disappeared and he or she was asked, “Do you think visiting the library is very boring [tester pointing at the large circle] or just a little bit boring [tester pointing at the small circle]?” The student answered these questions by touching either the big or the small circle located below the chosen face. The possible student responses

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represented two binary decisions, yielding the following response scale ranging from 4 to 1: 4 = happy face, large circle; 3 = happy face, small circle; 2 = sad face, small circle; 1 = sad face, large circle.

When designing the self-concept items, we aimed to link them to students' expectations of how easy or difficult they thought it would be to learn how to read and write (perceived difficulty) and to how they compared themselves with their classmates. See Table 1 for all items included in the literacy-interest and reader self-concept scales. Items of interest and self-concept appeared in random order during the test. The sample-specific reliability of the literacy-interest scale as measured using Guttman's λ_2 was .67. Guttman's λ_2 for the five self-concept items was .62. The reliability of the present thesis is within the range described by Harter and Pike (1984) for their subscale for preschool and kindergarten children (.62–.83, N = 146).

Table 1 – Items in the literacy-interest and reader self-concept scale T1

Literacy interest
T1
Do you like to look in and turn over pages in books?
Do you like to visit the library?
Do you like it when someone reads to you at home?
Do you like to receive a book as a present?
Do you like to look in books with a friend?
Do you like it when the teacher reads aloud to the class?
¹ Do you like to look in and turn over pages in comic books?
Reader self-concept

¹ This item (*Do you like to look in and turn over pages in comic books?*) did not contribute to stable factors in the cross-lagged model and was hence removed. However, it did contribute to a stable interest factor in the moderation model based only on measures made at school entry and was therefore included in the first study.

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T1

Do you find learning the letters to be easy/difficult?

Do you find learning to read to be easy/difficult?

Do you know as many letters as your classmates?

Measures used to identify at-risk students

To identify students at risk of reading difficulties at school entry, the at-risk index developed in the On Track project was used (Lundetræ et al., 2017). This project drew upon previous research to combine four tests into a student-at-risk index: letter knowledge, rapid automatized naming (RAN), phoneme isolation and phoneme blending. Falling below the 30th percentile on any one of these tests gave a student one “risk point.” Additionally, a student gained one risk point if his or her parents reported that at least two of the student’s close relatives (mother, father or sibling) suffered from reading difficulties. Students who scored at least three risk points were considered to be at risk of developing difficulties with reading. Application of this method yielded a group that made up 20 percent of the sample. In total, 212 students were identified as being at risk of reading difficulties at school entry (and 92 of those students participated in the On Track reading intervention). The only measure included in the at-risk index that has not already been described is RAN:

Rapid automatized naming (RAN)

RAN is a task where students name familiar objects presented repeatedly in random order. The examiner practiced the task and made sure that the child was familiar with the name of each object and understood the task procedure. The pictured objects were a sun, a car, an airplane, a house, a fish and a ball, all of which correspond to monosyllabic words in Norwegian. There were four rows of five stimuli in each matrix, and two trials. The child was asked to name each item as quickly and accurately as possible from the left to the right and from the top to the bottom. The time required to complete the task (in seconds) and the number of naming errors were recorded.

3.3.2 Measures at the end of the first grade (T2)

Word reading skill

The word-reading task consisted of ten items and is a word-reading subtest from the Norwegian National Assessment test battery (Norwegian Directorate for Education and Training, 2015). Each item consisted of a picture followed by four visually similar words, of which one corresponded to the picture. The child was asked to read the words as fast as possible and to check the word that matched the picture. Guttman's λ^2 for the ten word-reading items was .70.

Measures of literacy interest and reader self-concept

When the students' literacy interest and reader self-concept were measured at T2, they still responded by answering with two binary choices, but this time they did not receive picture support. For example, on the item "Do you like to read? Yes or no," the tester would record the student's answer to that initial question and go on to ask either, if "yes," "Do you enjoy reading a lot or just a little bit?" or, if "no," "Do you think reading is very boring or just a little bit boring?" The possible responses from each student again represent two binary decisions, yielding the following response scale ranging from 4 to 1: 4 = enjoys a lot, 3 = enjoys a little bit, 2 = just a little boring, and 1 = very boring. The tester read the items aloud and registered the student's responses on the computer tablet. Prior to answering the questions, the students were reassured that their teachers and parents would not be informed of their answers and told that it was important that they answered the questions as honestly as possible. The literacy-interest items focused on students' feelings about reading in school and at home, whereas the self-concept items related to perceived competence in reading. Items of interest and self-concept appeared in random order during the test. When it comes to reliability at T2, the literacy-interest measure had a Guttman's λ^2 of .85 and the self-concept measure had a Guttman's λ^2 of .61. The validation of the measures of literacy interest and reader self-concept used in the present study was specifically addressed in a separate measurement-development paper (McTigue et al., resubmitted for publication).

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Table 2 – Items in the literacy-interest and reader self-concept scales T2

Literacy interest
T2
Do you like to read?
Do you think reading is boring?
Do you look forward to reading?
Do you like reading at home?
Do you think it is fun to read books?
Reader self-concept
T2
Do you find it easy to read books that you have chosen yourself?
Can you figure out hard words in a book even if there are no pictures?
Do you think you are a good reader?
Can you figure out hard words by yourself?
Are you good at understanding the meaning of the words that you read?
Are you a worse reader than many others in your class?

Measures used to identify at-risk students

To identify at-risk students at the end of the first grade, the national cutoffs on the word-reading subtest included in the Norwegian National Assessment test battery administered at the end of the first grade were used (Norwegian Directorate for Education and Training, 2015). A child is deemed to be at risk of reading difficulties if he or she performs below the 20th percentile nationally on one of the subtests included in this battery. The idea behind this test is that when children perform below the 20th percentile, their teachers should implement preventive training in order to enhance the students' literacy skills.

For this reason, the test is designed to give teachers information about the 40 percent lowest-performing students; hence the scores of a group reflecting the entire population will not be normally distributed.

The students' task was to read words as fast as possible and to mark the word that corresponded to a picture. For example, a picture of a seal (sel in Norwegian) was followed by the words les ['read'], ser ['sees'], sol ['sun'] and sel. All stimuli words represented familiar objects and a variety of common grapheme sequences. Guttman's λ^2 for the 14 word-reading items for the whole sample was .74. The words were presented in upper-case letters and the test was terminated after two successive errors. In the present study, children at risk were identified as those who performed below the national threshold, which corresponded to having nine or fewer correct answers. This yielded 166 students considered to be at risk of reading difficulties, i.e. 13.4 percent of the sample.

3.4 Validity

For research results to be useful in any relevant sense, they must be valid. According to Messick (1995), validity represents the outcome of an evaluation of theoretical assumptions and empirical evidence with respect to whether conclusions and actions based on outcomes represent the true reality intended to be represented: "Validity is an overall evaluative judgement founded on empirical evidence and theoretical rationales, of the adequacy and appropriateness of inferences and actions based on test scores" (Messick, 1988, p. 33).

In the present thesis, validity concerns whether valid conclusions can be drawn from outcomes of the On Track study and whether the measures used give a sound picture of first-graders' early reading skill and motivation for reading. When evaluating the validity of the conclusions made in the current study, I will draw upon the classification of validity types put forward by Cook, Campbell and Shadish (2002) by discussing external validity, construct validity, internal validity and statistical validity within the project. Within the scope of these discussions, I will further reflect on the importance of using sound theoretical definitions of the constructs under investigation, as a prerequisite for conducting valid research.

External validity concerns the possibility of generalization. It reflects whether conclusions drawn in a study can be generalized to predictions about the entire population. At bottom, external validity concerns how similar the subject of an investigation is to the real phenomena it aims to study.

An ideal sample should mirror the population. The On Track sample has strong external validity in that it is large ($N = 1,141$ at T2) and in that it has an overall participation rate of 97.7 percent, meaning that almost all students in the participating schools joined the project. A special effort was also made to have the minority students participate in the study, by providing their parents with information material and questionnaires in their native languages (translations were made into a total of 10 languages). Hence the On Track sample is likely to represent the real variation manifested by students present in Norwegian classrooms. To this should be added that only 3.3 percent of Norwegian students attend private schools (compared with 15 percent in Sweden and 16 percent in Denmark), meaning that the potential private-school bias is reduced to a minimum (Statistics Norway, 2016). However, even though the results of the present thesis would thus seem to be valid for a general Norwegian school context, further consideration must be given to the issue of external validity when those results are compared across national borders with results obtained for students in different educational and daycare systems.

Internal validity, according to Cook, Campbell & Shadish. (2002), concerns whether inferences made between variables A and B mirror a causal relationship. Proving this requires showing that A predicts B over time, that A and B covary and that there are no other plausible explanations for this. In the case of Study I in the present thesis, a statistically significant association between dependent and independent variables is established. However, this is a cross-sectional study relying on a single measuring point, meaning that no predictions could be made over time. In Studies II and III, associations among the targeted variables were established. While a cross-lagged design (as applied in Study II) may be able to support causal inferences to some extent, no claim of causal relationships between the variables are made in those two studies. This is because, even though covariates based on sound theoretical assumptions have been taken into account, there may still be potential underlying extraneous factors that might alter the picture.

Statistical validity is concerned with the statistical methods applied, and with the extent to which dependent and independent variables are statistically related. In other words, it concerns the quality of the inferences made based on the relationships between the variables included in the study. This addresses the question of whether the associations measured reflect reality or are a matter of coincidence, namely Type I error (or “false positive”), where an alternative hypothesis is accepted when the results should in fact be attributed to chance, or Type II error (“false negative”), where an existing difference is not identified. In the present thesis, there is a risk of Type II error in Study III owing to the small sample size: the analyses were performed only on the at-risk students, i.e. only 212 students (of whom 92 participated in the intervention program).

As all statistical methods come with very specific purposes and sets of restrictions for use, making the appropriate choice of method for complex datasets requires a crucial qualitative judgment. The On Track data are suitable for making statistically valid inferential assumptions, partly because high standards are met for other aspects of validity. In Studies I, II and III, different sound statistical analyses were carefully chosen and applied using Mplus, R/Lavaan and SPSS.

Construct validity deals with the degree of coherence in the way that the constructs are defined and operationalized in tests—it is about understanding constructs and operationalizing them in assessments. According to Cook, Campbell and Shadish (2002), constructs are central means for connecting the measures used in an experiment to relevant theory. Hence constructs have much in common with definitions. Experiments containing construct-related mistakes are said to be in danger of misleading both theory and practice (Cook, Campbell & Shadish, 2002). In the present thesis, considering the definitions of early reading skill applied, quite straightforward, established measures are used to obtain information about students’ emergent literacy at school entry and their reading skill at the end of the first grade. By contrast, the measures of literacy interest and reader self-concept at this early stage of reading development represent work of a more experimental nature. To evaluate construct validity, it is also necessary to consider the extent to which the measures used are influenced by irrelevant constructs. Cook and Campbell (1979) highlight two types of threat to construct validity: construct irrelevance and construct

underrepresentation. Construct irrelevance is when a test is too broad and ends up measuring constructs that are irrelevant to the construct intended to be measured, while construct underrepresentation means that the test is too narrow and fails to measure important components or facets of the construct under inquiry. To avoid construct irrelevance and underrepresentation, the measures used in the present study were chosen and designed closely in line with sound theoretical definitions of the constructs under investigation as well as previous research in the field.

3.4.1 Validity and definitions of constructs

Central to all issues of validity is the quality of the construct definitions used (Cook, Campbell & Shadish, 2002). At the foundation level, definitions have direct consequences for the scope of what is measured, for how it is measured and for the conclusions that can be drawn from the results. Definitions are part of what is broadly denoted “theory,” along with basic assumptions, hypotheses and models within the field of investigation. In the philosophy of science, the Austrian philosopher Karl Popper is particularly renowned for advocating a systematic—and dynamic—interplay between theory and empirical data, through his strong emphasis on falsification (Popper, 2005). The idea that well-prepared theoretical propositions (hypotheses) must be made to clash with data in order to falsify the propositions represents a view of science as primarily systematic work on theory. Popper’s view of scientific progress entails that systematic and thorough work on theory lays the foundation for potential progress. In an introduction to a special issue on theoretical perspectives in reading research, Cain and Parrila (2014) put forward a (rather infrequent) Popperian critique of the research tradition by claiming that theoretical advances in the field have been overshadowed by empirical studies: “[...] the rapid expansion of empirical research into new topics and questions over the past 20 years has not been accompanied by matching access to theoretical advances” (p. 1).

When I first started my work on what would become this thesis and began exploring the phenomenon of reading motivation, my impression was that the research literature applied a variety of constructs. To me as an academic newcomer, it seemed as if the definitions of these constructs often overlapped

and that they were sometimes inconsistently used across studies. I still have that impression, and have found out that the issue of inconsistencies in this field has also been addressed by other scholars (e.g. Conradi, Jang & McCenna, 2014; Unrau & Quirk, 2014). A significant example of this tendency can be found in studies that choose to define constructs differently despite measuring them using identical items. These are scales for measuring different motivational constructs based on identical measures (e.g. the Reading Self-Concept Scale of Chapman and Tunmer (1995) vs. the MRQ reading-efficacy subscale of Wigfield and Guthrie (1997)). A second problem for me to begin with was that I did not find any articles that provided a comprehensive approach to the understanding of the constructs used to study reading motivation. Rather, when it came to the terminology used in reading-motivation research, recent reviews turned out only to provide consensus definitions (e.g. Conradi, Jang & McCenna, 2014). While those do make it easier to identify general positions in the field, there seemed to be a lack of definitions providing a more profound theoretical rationale and hence enabling attempts at bringing together the constructs of reading motivation and determining their relationship to reading skill.

The presentation of consensus definitions, with their focus on constructs closely tied to the data, may be considered an aspect of the point raised by Cain and Parrila (2014), as such definitions address fundamental theoretical perspectives to a lesser extent. This raises a concern with regard to the nature of validity in studies of motivation in the field of reading research. This is because the way our theoretical understanding influences our measures will be decisive for the extent to which our findings are sound empirical findings that contribute to theoretical progress, and not only true within the boundaries of overly narrow or wide definitions; Tønnessen (1997) calls this problem of mistaking platitudes for empirical findings “truth by definition.” In other words, the quality of the definitions used is directly linked to the threats to construct validity described above.

3.5 Ethical considerations

Given that the participants in my study were 5 and 6 years old, it was the parents who gave their consent for their child to participate. Since we at school entry

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assessed skills that these students not yet formally had learned, these measures were terminated after two subsequent errors. Furthermore, it could be questioned that participants at all levels of emergent literacy were asked to first evaluate, and then compare their level of letter knowledge to their classmates. However, the students were told that we were interested in how students their age felt about reading and that neither their teachers nor their parents would get to know their answers. The items on the tablets were also designed in a way that the students could evaluate themselves by touching the screen, so they did not necessarily have to say their answer out loud. All data was anonymized.

4 Summary of results

4.1 Study I

The first study addresses associations between literacy interest, reader self-concept and emergent literacy at the point when children enter school and start formal reading instruction. Within this scope, three hypotheses were tested: First, it was hypothesized that all children would be highly interested in literacy-related activities when they had just started their first year of school, regardless of their level of emergent literacy skill. Second, grounded in theory and past research suggesting the rapid emergence of weaker reader self-perceptions in struggling readers (Chapman et al., 2000; Morgan et al., 2008), it was predicted that even a few weeks into the first grade an association between reader self-concept and emergent literacy skill could be demonstrated. Third, based on conceptualizing interest as a precursor to reader self-concept, we expected to be able to demonstrate associations between literacy interest and reader self-concept for first-graders that varied depending on their level of emergent literacy skills. More specifically, we investigated whether literacy interest and emergent literacy skill explained reader self-concept synergistically, hypothesizing that interest would moderate the association between reader self-concept and emergent literacy skill in children starting formal schooling.

As regards the first hypothesis, the 1,171 school starters generally reported a high level of interest in literacy-related activities; in addition, levels of emergent literacy and interest were found to be unrelated. When it came to the second hypothesis, the findings suggest that, even at school entry, students with poor emergent literacy skills had a weaker reader self-concept than their average- and high-performing peers. Regarding the third hypothesis, interest was found to be a moderator in the relationship between reader self-concept and emergent literacy. This means that students who had a high level of literacy interest tended to show signs of a strong reader self-concept at school entry even if their emergent literacy was poor.

4.2 Study II

In the second study, cross-lagged relationships were examined between emergent literacy, reading skill, literacy interest and reader self-concept within the first year of formal reading instruction. The following research questions were investigated: 1) Do children's reading skills, literacy interest and reader self-concept show stability during the first year of formal instruction? 2) Do children's early motivation for reading, in the form of literacy interest and reading self-concept, predict performance in reading during the first year of formal reading instruction, or is it rather the case that reading skill predicts subsequent literacy interest and reader self-concept? 3) Do children's reader self-concept at school entry predict their subsequent literacy interest?

With regard to the first research question, the results revealed strong stability in children's reading skills and moderate stability in their reading self-concept and literacy interest in the first grade. Concerning the second research question, reciprocal relationships were found between early reading skills and reader self-concept, but no connections were found between early reading skills and literacy interest. Finally, regarding the third research question, a bidirectional relationship was established between literacy interest and reader self-concept within the first year of formal reading instruction.

4.3 Study III

The third study investigated the potential effects, in terms of a strengthening of reader self-concept, of increase in reading skill and intensive reading intervention during the first grade. The following hypotheses were addressed: 1) Students at risk of reading difficulties have a weaker reader self-concept than their peers at school entry. 2) A change in risk status during the first grade (i.e. no longer being at risk of reading difficulties by the end of the first grade) is positively associated with reader self-concept. 3) Receiving the On Track reading intervention will not explain any additional variance in reader self-concept by the end of the first grade when change in risk status has been controlled for.

The results show, first, that the at-risk students had a significantly weaker reader self-concept at school entry than their peers who were better at reading.

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Second, those students who were no longer considered to be at-risk by the end of the first grade had a stronger reader self-concept than the students still considered to be at risk. Third, receiving an early preventive reading intervention was not associated with the children's reader self-concept in the overall group of at-risk children.

In summary, the results of the present thesis suggest that the dynamics of early motivation and skill in the field of reading development may be more complex than what has been found in previous research. Reader self-concept was related to students' emergent literacy even at the start of formal instruction, and a bidirectional relationship was found between reader self-concept and early reading skill within the first grade. Literacy interest was not directly related to early reading skill at school entry nor across the first year of formal instruction. However, interest was reciprocally associated with reader self-concept within the first grade, and a strong interest at school entry was associated with a strong reader self-concept across skill levels. Children who were considered to be at risk of reading difficulties had a significantly weaker reader self-concept at school entry than their peers. Further, those students who, at the end of the first grade, were no longer considered to be at risk of reading difficulties had gained a stronger reader self-concept compared with the still-at-risk students in the intervention and control groups. Participation in a preventive reading intervention did not explain variance in reader self-concept at the end of the first grade once initial reader self-concept and change in risk status had been controlled for.

5 Discussion of results

The present thesis aims to explore and discuss the dynamics of reading skill and motivation in early phases of reading development. The fundamental questions are concerned with how reading skill, literacy interest and reader self-concept are associated within the first year during which children are formally taught how to read. The main aims of the thesis are:

- To investigate the status of students with poor emergent literacy and their peers with regard to motivation for reading, literacy interest and reader self-concept at the beginning of formal reading instruction.
- To explore the dynamics of reading skill, literacy interest and reader self-concept across the first year of formal instruction.
- To explore whether an increase in reading skill and receiving an early reading intervention affects the reader self-concept of students considered to be at risk of reading difficulties.

The key findings in relation to these aims are brought together and discussed in the following.

5.1 Relationships between emergent literacy and reading skill, and motivation in early phases of reading development

Prior international studies suggest that school starters generally have a strong interest in learning how to read (Baker & Scher, 2002), but the investigations in this study of reader self-concept at the very start of formal instruction represent more ground-breaking work. The present research investigated how emergent literacy, interest in reading-related activities and reader self-concept were related in 1,171 school starters.

To obtain knowledge about the students' emergent reading skill at the start of formal instruction, we measured their letter knowledge and phonological

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awareness, as these aspects are known to be the most important precursors of later reading skill (Lonigan, Burgess, & Anthony, 2000).

First, we found that the level of emergent literacy that children manifested at school entry showed great stability in relation to their level of reading skill at the end of the first grade. This means that the students who entered school with strong emergent literacy were, to a large extent, the same students who were the strongest readers after one year of reading instruction. This finding is in line with previous studies of children in preschool and in the early school years, confirming the high predictive value of emergent literacy for future reading skills (Viljaranta, Lerkkanen, Poikkeus, Aunola & Nurmi, 2009; Lerkkanen, Rasku-Puttonen, Aunola & Nurmi, 2004). For policymakers, parents and teachers, the take-home message here is that, in the current Norwegian school system, the emergent literacy that a child brings with him or her to school has a strong impact on how good a reader that child will be by the end of the first grade.

Second, the students' level of interest in literacy and their reader self-concept showed medium-strong stability through the first grade. These findings of stability are in line with those of Chapman, Tunmer and Prochnow (2000), and they suggest the existence of a connection between the level of interest in reading and the reader self-concept that a person enters school with, on the one hand, and that person's interest in reading and his or her reader self-concepts at the end of the first grade, on the other. This means that, to some extent, motivation for reading has already been established when children enter formal schooling. This finding is especially noteworthy as the measures of motivation used in the On Track study at the two measuring time points during the first grade were different (see Table 1). The measures were carefully designed to gauge as accurately as possible students' motivation for reading at the respective developmental stage. At school entry, the questions asked concerned the students' interest in literacy activities and their expectations of how difficult it would be to learn how to read, whereas what was targeted at the end of the first grade was their interest in actual reading and their perception of their own actual reading skills. Results from the current study confirms those of prior research showing some stability using identical measures between the first half of the first grade and later reading skills (e.g. Chapman, Tunmer & Prochnow, 2000).

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To sum up, the present study shows—in line with past research—that the level of emergent literacy that children bring to school is important for their development as readers. Further, the fact that the students' self-reported level of interest and their reader self-concepts show stability across the first grade supports the assumption that the students' motivation for reading start to form even before school entry, through their informal experiences with literacy situations and, as the case may be, their experiences with learning how to read from home and preschool. These assumptions are in line with the results from a study of six-year-olds in Singapore where Yeo, Ong and Ng (2014) found moderate relationships between the home literacy environment (HLE) and literacy skill as well as strong relationships between the preschoolers' literacy interest and their HLE; the strongest predictor of the HLE was found to be active parental involvement in literacy activities. The results of Yeo et al. (2014) indicate that, in early stages of reading development, the HLE is actually more closely associated with literacy interest than with reading skill. Further, Lever-Chain (2008), studying the reading perceptions of five-year-old boys in the year before they started the first grade and began to receive formal reading instruction, found that these prekindergarten boys had ideas of what it meant to be a good reader and that, by the end of kindergarten, when they were approaching the onset of formal instruction, some of the boys had formed clear perceptions of how easy or difficult reading was.

In line with prior research, the students in the present study generally reported that they were highly interested in reading, books, visiting the library and engaging in similar literacy-related activities. Similar findings on literacy interest have been reported for first-graders in the United States (Baker & Scher, 2002; Wigfield & Eccles, 1994). However, the present research stands out because the sample studied was so large and because the students' motivation for reading was measured so soon after school entry and the start of formal reading instruction (two to four weeks). Unlike for interest, however, where the entire population was homogeneous to begin with, the poor emergent readers reported a weaker reader self-concept. While prior studies have found students with poor early reading skills to have lower expectations about their own future reading skills than their peers within the first six months of the first grade (Chapman, Tunmer & Prochnow, 2000; Morgan & Fuchs, 2007), the present study identified a relationship between emergent literacy and reader

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self-concept even closer to school entry. These findings are quite noteworthy, considering that Norwegian school starters will not have received any kind of formal reading instruction.

For a more accurate and more valid approach to the issue of interrelationships between first-graders' early reading skill and their motivation for reading, cross-lagged associations between constructs at different time points were studied. In the cross-lagged model of reading skill, literacy interest and reader self-concept, no significant relationships were found between reading skill and literacy interest within the first grade, when the levels of the relevant adjoining constructs were held equal. Even though a great deal of prior research in older students has found interest to be related to reading skill (Deci & Ryan, 1987; Guthrie & Wigfield, 2000), the picture is more ambiguous when it comes to the youngest students. In fact, neither Viljaranta et al. (2009) nor Nurmi and Aunola (2005) found significant relationships between interest in literacy tasks and literacy performance in preschoolers and first-graders in Finland. Those findings are relevant to the present study since formal reading instruction in Finland—as in Norway—does not start until children enter the first grade. Kindergartens in both countries emphasize playful activity, and literacy activities there are to a large extent driven by the children's own initiative.

To sum up, the results of the present thesis suggest that significant relationships between children's reader self-concepts, emergent literacy and literacy interest begin to form as a result of the children's informal experiences with literacy activities and learning how to read, in the barnehage (kindergarten) and at home, before they start to receive formal reading instruction. A pertinent question here is of course which of these two contexts—the barnehage and the home environment—is more important for the students' early literacy and motivational development, but that question is beyond the scope and design of this study. Even so, given that literacy activities in the Norwegian barnehage are driven to a large extent by the children's own initiative, there is reason to believe that those children who have had positive experiences with literacy activities and situations together with their parents, grandparents, older siblings, etc., will more often initiate such activities in the barnehage (Stanovich, 2009). In other words, experiences from the home environment will most likely foster more initiative for reading activities in the barnehage. These findings are supported by those of Yeo et al. (2014), who found even stronger associations

between the home literacy environment (HLE) and literacy interest than between the HLE and early reading skill in six-year-old kindergarten students. Hence the home environment is likely to play a particularly important part in children's early development of both reading skill and motivation to read.

5.2 Dynamics of literacy interest and reader self-concept within the first year of formal instruction

While unable to show a relationship between literacy interest and early reading skill, the present thesis found literacy interest to be reciprocally related to reader self-concept within the first grade: interest at school entry was connected to reader self-concept at the end of the first grade and the school starters' reader self-concept was associated with their literacy interest at the end of the first grade. This finding underscores the important role of literacy interest for first-graders' reader self-concept. In other words, even if interest is not directly connected to students' reading skill within the first grade, the role of interest for skill development is made evident in this thesis through the impact of interest on the students' reader self-concept. Previous research suggests that students who are highly interested in literacy will be more likely to invest more time and effort in reading tasks, and will more willingly take on challenging reading tasks, than their peers who have a weaker literacy interest and hence a weaker reader self-concept (Wigfield & Eccles, 2002).

The finding of a generally high level of interest across early reading-skill levels at school entry is a very positive finding which may indicate that the work done in Norwegian homes and preschool contexts helps to strengthen and maintain children's literacy interest. The present thesis also confirms the importance of a strong literacy interest for the development of early reading skills, through its impact on reader self-concept, a finding in accordance with those of Bracken and Fischel (2008). We know both from theory and from prior studies that having a strong literacy interest is beneficial for students' reading development through behavioral outcomes such as frequent reading and persistence at reading tasks. However, there is one intriguing finding from the present thesis in this regard: if a beginning reader has a strong interest in literacy-related activities, this also seems to protect his or her reader self-concept,

independently of his or her actual level of reading skill. This suggests that interest in literacy-related activities is important for students' reading behavior not only directly but also through its effect on reader self-concept.

The present thesis has shown that school starters with poor reading skills tend to have a weak reader self-concept, but the above-mentioned finding actually suggests that a strong literacy interest is a protective factor for poor reader self-concept. The students who reported a very high level of interest in literacy activities also reported a very strong reader self-concept regardless of their level of early reading skill. Hence interest in reading and literacy may be an even more powerful factor than previous research in beginning readers has shown. Interest thus seems to play an important role in children's early reading motivation. The findings of the present thesis are in line with the theories of Renninger and Hidi (2016), where interest is considered to be the facilitator of productive engagement and optimal human motivation. Their theories build on the encouraging idea that interest is a feature that can be triggered and (with the appropriate support) develop in any person and at any time. Hence someone who is interested in a situation or an activity will make hard work and persistence look effortless and will increase his or her possibilities for creative contribution and achievement. This is good news to teachers facing great diversity in school starters' skills and self-concepts. Also, theory indicates that interest emerges through our feelings, values and knowledge related to the task in question and that motivational development benefits from environmental challenges and support (Ainley, 2006; Renninger & Hidi, 2016). Here lines can be drawn to the suggestion by Shavelson, Hubner and Stanton (1976) that our self-concepts are formed through our experience with—and our interpretations of—our environment. This means that educators and caregivers are important role models and facilitators when it comes to students' reader self-beliefs and their interest in reading and literacy.

5.3 Potential changes in reader self-concept as a consequence of increased reading skill

The results of the present thesis suggest that a strong literacy interest plays an important role for early readers with a poor self-concept. However, we need to know more about what can be done to strengthen students' reader self-concept

and we also need to find out whether an increase in reading skill in and of itself is related to a strengthening of reader self-concept in beginning readers. In the present thesis, it was investigated whether a change of risk status—into not being considered at risk of reading difficulties by the end of the first grade—and participation in a first-grade reading intervention were associated with an increase in the first-graders' reader self-concepts. The main idea behind the On Track study is to boost—through a motivational research-based reading intervention—the reading skills of students who are at risk of reading difficulties before experiences of defeat and failure start affecting both the development of their reading skill and their motivation to read.

Given that On Track is a preventive reading intervention, it was of great interest to explore how participation in this intervention affected the reader self-concept of the at-risk students. However, explicit strengthening of the students' self-beliefs beyond targeting reading skill within the program was not part of the intervention.

Because the present research suggests that the development of reader self-concept and reading skill is related even in the first year of curriculum-based reading instruction in school, these results indicate that intervention programs should explicitly address both of these issues. From these results, it would appear that the reciprocal relationship found by earlier research between self-concept and academic achievement in older students (Mash & Craven, 2006; Valentine, Dubois & Cooper, 2004) has important developmental roots even in the preschool age and the earliest phase of formal schooling. Marsh and Craven (2006) point out that, with respect to older students, the existence of a reciprocal relationship means that teachers and practitioners should aim, in their daily practice, to simultaneously foster students' academic self-concept and their academic skill within the specific domains. If work is done to foster self-concept without fostering skill, any improvements in self-concept are not likely to last for long, and, conversely, if efforts are made to improve performance without paying attention to the corresponding self-concept, the impact on performance may be reduced. In the third paper included in this thesis, prior research is analyzed and three approaches (implicitly) taken to foster motivation in early reading interventions are identified. The reflections below on the need for a clearer theoretical foundation in research on motivation draw upon that discussion of different approaches where motivation is implicitly

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assigned very different roles in intervention programs targeting poor emergent readers.

Taken together, the results obtained with regard to motivation for reading within students' first year of formal instruction indicate that the dynamics of early reading skill and motivation at the point when children enter school and start receiving formal reading instruction are more complex than previous research has found.

6 Implications of findings

This thesis is part of the On Track randomized controlled trial, where the core aim is to prevent Norwegian children from developing difficulties in reading and writing. The present thesis has contributed toward the achievement of this overall goal by providing new knowledge about the motivational aspect during the earliest phases of students' reading development.

In the present thesis, it has been discovered that the students who entered school with low emergent literacy also had a significantly weaker reader self-concept than their normal- and high-performing peers. This means that students who enter school with the risk factor of poor emergent literacy have an additional disadvantage in that this is accompanied by a weaker reader self-concept. This is a characteristic that teachers and parents should be aware of, given that weaker self-beliefs will affect students' behavior by making them read less frequently and take on less varied reading challenges (Guthrie & Wigfield, 1997; Chapman, Tunmer & Prochnow 2000). A weak reader self-concept is especially problematic for poor early readers (Morgan, Fuchs & Compton, 2008; Morgan & Fuchs, 2007), because they often need to invest substantially more time on task than their peers in order to acquire adequate reading skills.

Given that self-concept and reading skill show a reciprocal relationship in the present study, even during the first grade, and that poor readers seem to have a weaker reader self-concept even before participating in formal instruction, teachers should strive to enhance their students' reader self-concept alongside the reading and writing instruction they provide from day one in school (Wigfield, 2000; Bates et al., 2016). Additionally, considering the findings indicating that students' reader self-concept starts forming even before they receive any formal reading instruction, preschool teachers and parents should be aware of the value of having a strong reader self-concept and of methods that can be used to enhance children's reader self-concept even before they start formal schooling.

The On Track project is based on strong arguments for early identification of students who have or are likely to have poor reading skills, and it has contributed an index for identifying those students at school entry (Lundetræ et

al., 2017). The present thesis plays a part here by identifying patterns of relationships between motivation and reading skill even in the earliest phases of children's reading development. Still, however, these findings leave us with a fundamental question: once the teachers have identified, at school entry, the students with the poorest emergent literacy, and presumably the weakest reader self-concepts—then what?

The present thesis shows that school starters with poor reading skills tend to have a weak reader self-concept but also—more intriguingly—that a strong literacy interest at school entry was a protective factor for reader self-concept. Among the 1,171 students in the On Track sample, the students who reported a very high level of interest in literacy activities also reported a very strong reader self-concept, regardless of their level of early reading skill. This means that interest in reading and literacy seems to be an even more powerful factor than has been suggested by previous research on beginning readers. Hence, interest would seem to play a very important role at the early stages of children's reading development. The results of the present study are in line with the theories of Renninger and Hidi (2016), where interest is considered to be a facilitator of productive engagement and optimal human motivation. Instruction that enhances students' reading motivation has been claimed to be a hallmark of outstanding reading teachers' classroom practices (Pressley 2006). Given that students' motivation for reading decreases over the elementary-school years, sound methods for maintaining and triggering young students' interest in reading are clearly in demand among teachers (O'Flahavan et al., 1992). Stipek (1996) reviews fruitful ways of fostering students' academic motivation. Wigfield and Cambria (2012) identifies a substantial overlap between effective practices to foster self-beliefs and intrinsic motivation in that review by Stipek. This overlap is in line with the results from the present thesis showing relationships between these two concepts at different levels within the first grade, and it tells us that effective practices for fostering interest and self-concept in learning situations coincide to a large extent. What Stipek stresses in particular for strengthening intrinsic motivation are rewards as indicators of good effort (Ryan & Deci, 2009). Hence the use of assessment and evaluation is recommended, but as indications of the effectiveness of students' working habits, not as tools to exercise control or inspire fear of poor test performance. Both rewards and evaluations are the most effective as means

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of fostering motivation when they are used to provide students with fruitful advice on the kind of effort they should make in order to achieve academic progress. Additionally, in line with the On Track intervention, teachers should present the students with a variety of different tasks, giving them opportunities to choose from different learning materials, preferably adapted to the individual student's level of skill, so that they are presented with challenges to an appropriate extent and at an appropriate level.

Stipek (1996) further highlights how the work of fostering students' intrinsic motivation is interwoven at different levels of classroom practices:

- instruction should correspond to students' background knowledge;
- room should be made for opportunities to further explore topics of particular interest;
- mistakes should be handled as something to be expected and something that will help the process of learning.

These are all teaching practices that are associated, in older students, with stronger motivation as a result of skill development, concentration, persistence, higher learning goals and satisfaction from gaining knowledge. Different classroom practices for enhancing motivation and skill development are interrelated across task levels and instructional practices (Wigfield, 2000; Wigfield & Cambria, 2012; Stipek, 1996). Interesting topics for future research within this field are questions concerning the optimal combination of effective practices, especially in order to achieve optimal conditions for students' motivation and learning during the first years of formal schooling. This kind of research may be best carried out within the framework of early reading interventions.

While the On Track reading intervention led to a significant increase in the reading skill of the intervention participants compared with that of the students in the control group (Solheim, Frijters, Lundetræ & Uppstad, in press), my research also showed that participation in the On Track intervention program did not automatically lead to a strengthening of the students' reader self-concepts. However, further inquiries revealed that those students who, after receiving the intervention, were no longer considered to be at risk of reading difficulties reported significantly stronger reader self-concepts than the other

intervention participants. This means that the students who experienced a substantial increase in reading skill, such that by the end of the first grade they had left the at-risk group, reported a stronger reader self-concept. This lends further support to the assumption that a substantial increase in reading skill is accompanied by a strengthening of reader self-concept.

In the literature, it is sometimes claimed that the robust focus on performance in present-day school reforms constitutes a general challenge for motivation research, in which effort is the center of attention (e.g. Yeager & Dweck, 2012; Dweck, 2010; Wigfield & Cambria, 2012). This trend has been particularly evident in recent educational legislation in the United States: the No Child Left Behind (NCLB) Act. However, in 2015 the NCLB Act was replaced by the Every Student Succeed (ESS) Act, as a direct response to the many criticisms of the NCLB. One of the major concerns was that the NCLB Act relied too much on standardized tests and that schools faced penalties if their students did not attain the proficiency goals on mandatory tests. The new ESS Act still requires schools to report on the progress of traditionally underserved children, including those receiving special education, but reporting on students' progress rather than solely on their performance paves the way for motivation research and efforts to take on a more prominent role in the education system. In Norway, there are also mandatory reading-assessment scales for identifying the lowest-performing readers at the end of the first three years of formal schooling. These tests are mainly intended as a tool for teachers to ensure that the poorest readers are identified and receive preventive training.

In the past century, motivation research has contributed massive knowledge to education research, largely with regard to how instruction and different features of the school environment affect students' motivation. However, even recent studies continue to observe a clear decline in motivation over the school years. Given the reciprocal relationship between motivation and skill, this gives cause for concern (see Eccles, Wigfield & Rodriguez (1998) for a review of the decline in reading motivation over the elementary-school years). However, one source of hope in this regard is the many intervention studies that show how students' negative motivation patterns can be altered (for a review, see Lazowsky & Hulleman, 2016). An interesting and important topic for future research will be to expand the base of research into reading-motivation

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interventions that foster literacy interest and reader self-belief in poor emergent readers during the earliest stages of their reading development.

The results of the present thesis indicate that, if we provide reading instruction that fosters students' early reading skill and enhances their motivation for reading, we can bring about a school context where students will not only learn how to read but will also actively choose to read. This may be a fruitful way of preventing the negative spiral that poor emergent readers run a high risk of entering when they take part in formal reading instruction in the school of today.

7 Theoretical reflections

I conclude this thesis with some theoretical reflections. Rather than being specific reflections on the results of the present thesis, they represent a result of my endeavors trying to navigate the murky waters of motivation theory. My aim with these reflections is to nourish some ideas about the foundations of motivation and reading skill. I will draw upon basal Aristotelian philosophy as well as insights from two of the most influential traditions within psychology: behaviorism and cognitivism. In doing so, I will apply and develop perspectives put forward by Tønnessen (2011), who provides an extensive historical overview and theoretical contributions to the understanding of the concept of skill. Tønnessen explains his interest in foundational perspectives and the ontology of skill by referring to the general lack of such perspectives in the contemporary research tradition (Tønnessen & Uppstad, 2015). The discussion of the ontology of skill means that this work has a wider application in a variety of fields within psychology, linguistics and education (Tønnessen & Uppstad, 2015, p. 45). As the present doctoral project is concerned with the development of both reading skill and motivation to read, I will lean toward this line of thought in my attempts to understand both phenomena—or, more precisely, to understand their nature and their interrelationship.

7.1 A theory of potentiality

Like most other skills and human characteristics, language skill and motivation for reading and learning are seen in Aristotelian philosophy as potentialities (Aristotle, 1934). When we are conscious we may use or realize parts of our potentialities. Then the quality of our performance or realization of the potentialities will be dependent both on our original potential basis (our genetic disposition) and—more importantly—on how far our potentials have developed.

Additionally, there will be various components within the student and the environment that may hamper the realization of his or her reading skill/potential in a given context. Consequently, first-grade students' reading performance and reading motivation will vary across situations, for different reasons. These individual differences may be substantial, but they are never entirely consistent

or static. For instance, reading skill will differ depending on factors related to the reader (e.g. motivation), the text, the context and the criteria against which reading performance is judged. Along these lines, Tønnessen considers that enhancing a student's realization/performance of a skill is a much easier task than strengthening the underlying potential. Concretely, for example, factors hampering students' performance of reading skill on a reading test (classroom noise, lack of sleep, etc.) can be quite easy to eliminate. By contrast, the development of reading skill (i.e. of the potential) is the result of repeated, more or less successful, realizations of that potential, and this is a much slower process. The acquisition and strengthening of a skill is a result of practice, i.e. learning by doing (e.g. Aristotle, 1934; Dewey, 1962). The quality of the actual realization of our potentialities, and hence—at the next stage—the development of our potentialities, is influenced by environmental conditions and closely linked to the realization of adjoining potentials (Tønnessen & Uppstad, 2015).

Two such influential adjoining potentials in early reading development are literacy interest and reader self-concept. Interest and self-concept are potentialities because they may be realized differently in different situations. Quite a few studies have identified reciprocal relationships in the developmental dynamics of reading skill and reading-motivational components (Marsh & Craven, 2006; Marsh et al., 2005; Valentine, DuBois & Cooper, 2004), but few attempts have been made to conceptualize their ontological status. In other words, few researchers have asked what kind of phenomenon these constructs really are, on a more fundamental level. With Tønnessen (2011) and his inspiration from Aristotle (1934), I suggest that they can best be seen as potentialities.

7.2 Realizing students' full potential as readers

We know today that there are few limits to how far experience, training and effort can drive people (Sternberg, 1985; 2014; Dweck, 2017; Renninger & Hidi, 2016). The theories developed to explain that finding indicate that our abilities are dynamic entities with inherited possibilities for development and for realizations under various conditions. In this way, we may say that the theory of potentiality constitutes a prerequisite for the dominant role that effort has taken on in more recent theories of learning and development (e.g. Dweck,

2017). Within the potentialities framework, skill, motivation and other human characteristics are never considered to be static entities (Aristotle, 1934; Tønnessen, 2011). Potentialities are dynamic entities that are never fully evolved; they always have the possibility for improvement or degeneration. Consequently, this framework implies that characteristics such as reading skill, reader self-concept and literacy interest can be developed and realized at any given stage for any given student. In this way effort becomes a cornerstone in any realization of potentialities. Hence the theory of potentialities provides the theory of mindset (Dweck, 2010; Yeager & Dweck, 2012) with an understanding that all our skills and personal characteristics can potentially be changed. For teachers, parents and caregivers, the theory of potentialities offers rich opportunities to facilitate growth in students—as well as in themselves as facilitators of learning (Chetty, Friedman & Rockoff, 2014; Maxson, 1996).

Success builds beliefs in one's personal efficacy while failure undermines such self-beliefs (Zimmermann, 2000). These mechanisms are particularly evident in situations where failure occurs before a sense of efficacy has been firmly established (Bandura, 1995). This implies that children who are learning how to read have a reader self-concept that is particularly vulnerable to failure. One important aspect here relates to how students handle the reading challenges that they will inevitably meet during their journey through the educational system. Research has shown that boosting students' self-esteem is not as effective as ensuring that they develop mindsets where challenges are identified as necessary means for progress and as obstacles that can be overcome through effort (O'Mara, Marsh & Craven, 2006; Stipek, 1993). Here I in accordance with previous research (Rosenberg, 1979; Marsh, 1986; Hattie & Marsh, 1996) define self-esteem as a global form of self-concept, and reader self-concept as one of our many specific forms of self-concepts. While these lines of thought are beneficial to all students, they are particularly important for students who are struggling with learning how to read. Given that these children need a great deal of practice in order to develop adequate reading skill, and that poor emergent readers often develop negative patterns of attribution related to their reading (Morgan & Fuchs, 2008; Stanovich, 2009), a key task for teachers and parents is to keep reminding all students, especially the struggling ones, of their potentials/possibilities for growth achievable through effort and stamina. Research has found that praising children's effort rather than their ability seems

to be beneficial to their self-perceptions and will enhance their skill through hard work and increased success (Dweck & Master, 2009; Yeager & Dweck, 2012). Emphasizing process-oriented rather than person-oriented praise is a way for teachers and parents to help children learn how to take on challenges and to be persistent in the face of setbacks.

Thinking in terms of potentialities opens the future and places considerable responsibility on the individuals. Viktor Frankl's existence analysis (2014) aims to ensure that humans are aware of their responsibility for choosing their course whatever their conditions and characteristics:

... a person is free to shape his own character, and man is responsible for what he may have made out of himself. What matters is not the features of our characters or the drives or instincts per se, but rather the stand we take toward them. And the capacity to take such stand is what makes us human beings. Frankl (2014, p. 17).

Frankl is also well known for placing much emphasis on hope as driving force—a strong factor closely related to motivation.

The present thesis contributes to the existing knowledge derived from studies suggesting that the development of reading skill is related to that of motivation for reading. Results from the present thesis indicate that the development of the potential of reading skill and that of the potential of reader self-concept influence each other even before children formally start learning how to read. To my knowledge, no prior study has found such relationships at such an early stage of children's reading development.

Realizing the first-graders' full potential as readers will require optimal conditions. A first-grade student who has learned ten letters of the alphabet will, under optimal conditions, be able to read all orthographically transparent words that contain only those letters. However, even under optimal conditions, this first-grader will not be able to read more complex texts containing all letters of the alphabet. In other words, the acquisition of a potential requires both theoretical knowledge (explicit learning of content, such as the letters) and practical exercise (implicit learning). First-graders who are learning to read need theoretical knowledge of letters and their corresponding sounds, and they need as much practice as possible with reading appropriate texts (i.e. learning by doing). As children realize their potential for emergent literacy, their

potential for reading develops. For optimal realization, a person's level of self-concept should slightly exceed his or her actual level of skill (Bandura 1995). This means that potentials enjoy the most optimal conditions for development within the zone of proximal development (Vygotsky, 1987).

Considering reading skill and motivation as potentialities that develop in an interrelated manner is in line with more recent dynamic views that integrate the development of reading skill over the lifespan with relevant adjoining constructs such as motivation and strategy use (Alexander, 2004; Alexander & Fox, 2004). This view stands in stark contrast to how reading is seen in older theories based on modular thinking. For example, Von Eckardt (1993) stated that "the human cognitive capacities are sufficiently autonomous from other aspects of mind that, to a large extent, they can be successfully studied in isolation" (p. 312). Such modular thinking (cf. Fodor, 1983) makes it difficult to find a connection between learning on the one hand and motivation, stimulation and reward on the other (Tønnessen & Uppstad, 2015, p. 24). This is because, in theories such as these, reading is seen as a result of automatized decoding, with no account taken of adjoining cognitive factors. Hence developmental dynamics such as those suggested by the present thesis between skill and motivation can hardly be explained by such theories. Drawing upon our new cross-lagged data from the earliest stages of reading development, I therefore ask if there is a need for a more appropriate way of conceiving the dynamic interrelationship between the constructs involved. If we consider reading skills, literacy interest and reader self-concept as potentialities, then we may conceive of the dynamics between them in biologically inspired terms, by comparing them to organisms living in dynamic, symbiotic relationships. Organisms living in symbiosis tend to derive mutual benefit from this arrangement. They all develop, although not strictly at the same pace, and developmental change in one organism (or construct) will affect the others. The fact that the results from the present study show a constellation of reading skills and motivational constructs that differs from that found for older students (Harlaar, Deater-Deckard, Thompson, DeThorne & Petrill, 2011) may exemplify the dynamic, symbiotic nature of the motivation–skills relationship: the interrelationships between these constructs seem to change as children gain more experience with reading situations and as the tasks they are given grow more complex.

7.3 Psychological explanations of skills and motivational components

In humans, skills are an important subgroup of our potentialities. All skills are potentialities, but not all potentialities are considered to be skills, for example, the breakability of glass is a potentiality, but it is not a skill (Tønnessen, 2011). I philosophically propose that theories of potentialities represent a fruitful way of understanding the interrelated development of motivation and skill. From a psychological point of view, I suggest that the nature of motivation and its underlying constructs can best be understood by combining insights from both the cognitive and the behaviorist traditions. Tønnessen's (2011) framework is based on the assumption that humans are a unified whole of body and mind, meaning that our nature is best reflected in explanations of skills derived from both of those traditions. Here it should be noted that when Tønnessen (2011) suggests that the currently best way to define skill is by combining key concepts from cognitive psychology and behaviorism, he implicitly problematizes the dominant position achieved by cognitive psychology in theories defining both reading skill and motivation for reading.

7.3.1 Skills

From a psychological point of view, Tønnessen (2011) combines insights from both cognitive and behaviorist traditions by defining the performance of a skill as an appropriate combination of automaticity (originating from behaviorism) and awareness (originating from cognitivism). On Tønnessen's view, skills are acquired and developed through practice, i.e. conscious monitoring and possible corrections to performance. In other words, a first-grader who is learning to read will constantly alternate between or combine automaticity and awareness when developing his or her reading skill. In the very early phases of reading-skill development, awareness will be in action most of the time. However, as children gain experience with reading activities, learn more letters and are presented with adequate reading tasks, they will recognize an increasing number of words automatically without having to use their decoding skills, meaning that automaticity takes on an increasingly prominent role in their performance of word-reading skill. However, the situation will always determine what is the optimal combination of the two. In his 1999 paper,

Tønnessen describes these dynamics as a continuum between the two extremes of monitoring and steering. Every position on this continuum represents a different combination of automaticity and awareness, but there is no position characterized by pure automaticity or pure awareness. More awareness is often required when a reader encounters unfamiliar words or unexpected syntax or at first fails to understand a text; this represents a move on the continuum in the direction from monitoring to steering. The ability to switch to a more convenient combination of automaticity and awareness when required in the performance of skill is characterized by Tønnessen as one of humans' most important basic capabilities, as a feature that distinguishes humans from other living creatures. In summary, the acquisition of a skill requires a combination of automaticity and awareness, i.e. features highlighted in behaviorism and cognitive psychology, respectively.

7.3.2 Motivational components

According to Tønnessen (2011), our motives—like our skills—are seen as potentialities. Motives can be realized in different ways or degree according to the situation. Even if motives are potentials like skills, they differ from skills in important ways. The approach taken here is based on the assumption that humans are a whole of body and mind. This entails that physical needs and drives are important, but not sufficient to draw a full picture. In explaining our motives, we also need to consider goals and intentions, which presuppose consciousness and thinking. Along the lines of describing skill as an appropriate combination of automaticity and awareness, thus drawing upon both behaviorist and cognitive traditions, I would like to highlight Ryan's (2012) thoughts on the concept of motivation. Ryan states that one of the most amazing aspects of human behavior is that it is spontaneously organized—our behavior is both energized and directed. In the literature, various perspectives and constructs are used to describe such motivated organized human behavior (examples include goal theory, expectancy–value theory and self-determination theory).

Taking Ryan's (2012) characterization of human behavior as both energized and goal directed as my starting point, I would like to find appropriate linguistic expressions for thinking about motivation and skill. In accordance with

Tønnessen and Uppstad's (2015) understanding of skill, I wonder whether a fruitful approach to a more profound understanding of human motivation, resting on the same traditions, could be found in seeing this as an appropriate combination of driving forces (energizing) and goals (directedness). In the behaviorist tradition, motivational phenomena are explained in terms of underlying driving forces, while the cognitive tradition tries to explain inner psychological mechanisms such as goals, directions and objectives. However, the energizing driving forces and the objectives striven for in human behavior are in many ways woven together—meaning that this difference or distinction will at times be more meaningful in theory than in practice.

While there seems to be more or less a consensus about the constructs that should be relied upon to measure emergent literacy and early reading skill (Lonigan, Burgess & Anthony, 2000; Cunningham, 2001), studies of early reading motivation seem to apply a variety of different constructs when investigating more or less the same underlying phenomena: literacy interest, reading interest, task motivation, task value, etc. However, a closer look at the constructs most frequently used in the field of motivation reveals an obvious dominance of cognitive constructs. This raises the question whether more extensive investigation of behaviorist constructs concerned with the driving forces of motivation could potentially contribute to our understanding of reading-motivational phenomena. Areas for exploration along this line of research could be the observation of reading behavior (such as persistence in reading situations), investigation of the extent to which students will go on reading a story when given the opportunity to stop reading, or studies of children's likelihood of picking up a book when given a choice of different activities. However, it should be kept in mind that strict behaviorists do not allow for motivation (being an introspective phenomenon)—they solely consider behavior. Hence there are many behaviorist traditions that do confront and utilize motivation, but also many that do not. The seminal review by Robert White (1959) problematized the extensive behavioral focus in educational research. However, Tønnessen & Uppstad (2015) argue for a combination of behaviorist and cognitivist views. I will opt for this combination when it comes to both motivation and reading skills.

7.4 Concluding remarks

When considering motivational development as an appropriate combination of driving forces and goals, I reason in line with Tønnessen and Uppstad (2015), who not only combine behaviorism and cognitivism but also combine the hypothetic-deductive method (Popper, 1957) and the hermeneutic method of interpretation (Gadamer, 1960). The foundational principle of the hermeneutic approach is that the parts are always understood by reference to the whole and that the whole can only be understood by reference to the parts. According to the hermeneutic way of thinking, we do not have a clear understanding of a goal when we start a process. Therefore, we cannot choose a method or strategy as if we had a clear idea of our goal. Our understanding of the goal will develop as we move toward the goal and the way of proceeding will be changed and adjusted accordingly.

Importantly, according to these theories it is not only our thoughts that grow clearer along the way. When students who are learning how to read participate in reading situations, they will not only develop their reading skill but will also form a clearer picture of themselves as readers, as they develop a reader-self-concept and interest in, passion for or—in the worst case—avoidance of reading. Findings showing that there exist associations between motivation and reading skill at such an early stage as identified in the present thesis underscore the importance of making efforts from day one in school to promote students' skill and motivation in parallel.

Theoretical reflections

8 Limitations

Given that the reading skill of the first-graders studied was highly likely to develop as a consequence of formal instruction, it was not possible to use identical measures to test either the students' reading performance or their motivation at the two time points. At school entry, levels of emergent literacy and interest in literacy-related activities were measured. At the end of the first grade, actual reading skills and interest in actual reading were measured instead. With regard to reader self-concept, there was a shift in the balance of the items used, from the perceived difficulty of the process of learning how to read to the students' perceived reading competence and their experiences with learning how to read over the first year of school.

Measuring the reading motivation of students on the verge of formal reading instruction also means that the amount of experiences on which the students could base their answers would differ greatly. While some students will have given their answers based on a variety of experiences with literacy from kindergarten and their homes, others will have had very few such experiences to which they could relate their answers. Another limitation concerns the phrasing of the measure of literacy interest: it may be possible for students to be interested in an activity without actually liking it. If a student answered that he or she did not like to read at home, for example, that may not be exclusively because he or she thought it was boring. Additionally, it may be possible to like an activity without actually being interested in it. This relates to the issue of construct underrepresentation (Cook & Campbell, 1979)—to the fact that the items measuring interest in literacy may have been too narrowly phrased to capture certain aspects of the targeted constructs. However, the stability of interest observed across the first year of formal instruction does not indicate any major statistical weaknesses.

In the second study included in this thesis, a cross-lagged panel model was constructed. Such models are used to investigate structural associations between repeatedly measured constructs. Recently, various authors have criticized the frequent use of panel models. One criticism is that a panel model

Limitations

cannot easily incorporate a theory of intra-individual change and that the autoregressive and cross-lagged effects are not specific to the type of individual level change observed over time. However, I find that, in spite of the many justified criticisms, the panel model remains a useful tool for developmental studies in the field of educational research. Even so, an important clarification that must be emphasized is that, while the cross-lagged model shows bidirectional relationships, I do not claim that there is any form of causal relationship between the factors in question. Even if covariates based on sound theoretical assumptions are taken into account, potential underlying extraneous factors might still alter the picture.

The quest for the nature of the interrelationship between self-concept and interest in early readers seems to remain unfinished. More research is needed to establish when children's reader self-concept is formed and how it is developmentally related to interest.

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The Articles



Article I

Walgermo, B. R., Frijters, J., & Solheim, O. J. (2018). Literacy interest and reader self-concept when formal reading instruction begins. *Early Childhood Research Quarterly*, 44, 90–100. doi.org/10.1016/j.ecresq.2018.03.002





Contents lists available at ScienceDirect

Early Childhood Research Quarterly



Literacy interest and reader self-concept when formal reading instruction begins

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ARTICLE INFO

Article history:

Received 9 March 2017

Received in revised form 9 February 2018

Accepted 5 March 2018

Keywords:

School starters

Literacy interest

Reader self-concept

Early reading motivation

Emergent literacy skills

ABSTRACT

The present study examines the associations among literacy interest, reader self-concept and emergent literacy skills at the very start of formal reading instruction in 1171 five- and six-year-olds. The results indicate that emergent literacy skills are directly related to reader self-concept but not to literacy interest. Further, interest moderated the relationship between emergent skills and self-concept. School starters with high literacy interest demonstrated strong reader self-concept, even if their emergent literacy skills were poor. These results suggest that the early motivational dynamics associated with the emergence of reading skill may be more complex than previous research has found them to be. The observed dynamics may have implications for the emergence of reading skill during this specific period of changing developmental context.

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1. Introduction

Having adequate reading skills is a prerequisite for text comprehension and hence for success in school, at work and in everyday life (Lonigan & Shanahan, 2009). The development of reading skills, as a prerequisite to becoming literate, represents one of the most significant academic tasks that children undertake during their primary school years. As children engage in learning tasks at school, they develop an awareness of their own performance (i.e., reader self-concept) and comparison with classmates begins (Ames, 1992). Once these evaluative processes are in place, failure in accomplishing reading tasks can harm the development of a sense of competence. Given that learning to read is the first academic task encountered in school, a lack of success in learning to read will often entail severe consequences for a student's overall self-image (Bandura, 2002; Stanovich, 1986). In order to protect that overall self-image, students may reduce the level of value or interest that they assign to tasks associated with poor performance on their part (Covington, 1998; Harter, 1982; Wigfield, Eccles, Schiefele, Roeser, & Davis-kean, 2007). Given that students who are struggling with learning how to read often need extensive time on task in order to acquire adequate reading skills, being interested in literacy and

having high levels of self-efficacy might be especially important for the reading development of these students.

One major limitation of research specifically addressing interest in and motivation for reading is a relative lack of studies carried out at the point in time when reading skill emerges: at the very start of children's school careers. While previous research has shown that school starters generally have a strong interest in reading, several studies also show that, only a few months into the first grade, the poorest readers already have a weaker reader self-concept than their peers (Chapman, Tunmer, & Prochnow, 2000; Morgan, Fuchs, Compton, Cordray, & Fuchs, 2008). However, we know little about how early the forming of students' reader self-concept begins and about whether such differences in self-concept are already evident when formal reading instruction starts. Having information about students' level of interest and their reader self-concept at this developmental stage may make teachers better able to adapt their reading instruction to the individual student. To our knowledge, no previous large-scale study has specifically investigated both interest in reading-related activities and reader self-concept at this developmental stage. The present study addresses literacy interest and reader self-concept at the very start of formal reading instruction in school in a sample of 1171 first-graders. First, we investigate whether children's interest and self-concept are associated with their level of emergent literacy skills. Second, we investigate associations of skill and interest with reader self-concept for different groups of readers.

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<https://doi.org/10.1016/j.jecresq.2018.03.002>

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1.1. Previous research in the field

Perceptions of competence are associated with the amount of interest taken in, or the value placed on, tasks or activities within the same domain (Deci & Ryan, 1987; Eccles, 1983; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). However, research also suggests that even if children think that they are competent at an activity and are able to perform it efficaciously, they may still not engage much in that activity if they are not much interested in it or do not value it highly (Wigfield & Cambria, 2010). Interest in reading is important for reading acquisition, because children who are interest driven tend to spend more time reading for leisure, are likely to devote more effort to literacy tasks and are, for this reason, more likely to become skilled readers than their peers who are less interested in reading activities (Ecalte, Magnan, & Gibert, 2006; Malloy, Marinak, Gambrell, & Mazzoni, 2013).

In the expectancy-value model of motivation, children's self-concept in a given domain is directly associated with their expectations to succeed in that domain as well as with the value that they place on activities related to that domain (Eccles, Wigfield, Harold, & Blumenfeld, 1993). This aspect of the expectancy-value model is in line with results from a Finnish longitudinal study (Nurmi & Aunola, 2005) where task value—defined as the level of children's interest in a particular school subject during their first school years—reflected changes in the children's feeling of competence relating to the subject in question. On the basis of that finding, the Finnish researchers suggest that task value (i.e., interest) may be a driving force behind changes in children's self-concept during their first years of school (Nurmi & Aunola, 2005). In studies on older students, the development of interest has been claimed to provide a basis for children's feeling of competence in relation to different subjects in school, and there is evidence that the initial development of interest precedes the development of children's feelings of competence, and that once both have developed, there is a reciprocal association between them (Renninger, Hidi, & Krapp, 2014; Renninger & Hidi, 2016).

As children progress through the school years, there seems to be a substantial correlation between the development of their interest, self-concept and reading skill; some studies have even found reciprocal relationships between these constructs (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005). Students who are good at reading tend to think of themselves as good readers, they engage more frequently in reading activities, and they make rapid progress as readers. Analogously, students with a weak reader self-concept are often poor readers, are more likely to avoid reading activities, and as a consequence often remain low-performing readers. Children who have entered this vicious circle of low interest in reading and negative expectations about their own performance often struggle to find ways to develop proficient reading skills (Poskiparta, Niemi, Lepola, Ahtola, & Laine, 2003; Spear-Swerling & Sternberg, 1994).

1.2. Components of reading motivation

While early reader self-concept has been conceptualized as a motivational component (Möller & Bonerad, 2007), interest is rather considered a psychological state and a motivational predisposition (Renninger & Hidi, 2016; Renninger & Su, 2012). Literacy interest and reader self-concept are both crucial to students' learning and have been extensively studied as the driving forces in the development of early and emergent reading (e.g., Baker, Dreher, & Guthrie, 2000; Baker & Scher, 2002; Baroody & Diamond, 2014; Frijters, Barron, & Brunello, 2000).

1.2.1. Literacy interest

Interest is closely related to the concepts of intrinsic motivation and task value (Eccles, 1983; Hidi & Renninger, 2006; Schiefele, 2009). All three concepts share the assumption that a person is drawn to a task for reasons inherent in the task, independent of any future consequences. In the present study we define interest in line with Ainley (2006): "Interest is conceptualized as an affective state that represents students' subjective experience of learning; the state that arises from either situational triggers or a well-developed individual interest" (Ainley, 2006, p. 392). Within the lines of this definition we recognize that "learning", does not only involve formal instruction, but includes developmentally relevant literacy experiences that children have outside of the school context.

According to Renninger and Su (2012), the development of interest involves the three components of feelings, value and knowledge. In the earliest phases, interest may be considered an emotion and is minimally dependent on knowledge (Ainley, 2007; Renninger & Su, 2012). However, as interest develops and deepens, the desire for knowledge and value develop concurrently: increased knowledge enables the development of value and, as value develops, it will lead the person to search for additional understanding (Ainley, 2007; Renninger & Hidi, 2016).

The development of interest through an interplay between feelings, value and knowledge is reflected in studies reporting on children's interest in literacy and reading in kindergarten and through the school years. While the evidence is mixed, most studies have documented a generally positive disposition towards literacy activities among beginning readers (Baker & Scher, 2002; Nurmi & Aunola, 2005). It has been suggested that children's literacy interest and their later tendency to engage in reading activities are formed by the literacy environment in their homes and influenced by the literacy practices of their parents (Frijters et al., 2000; Sénéchal & LeFevre, 2014)—in addition to the literacy experiences and activities in kindergarten (Baker & Wigfield, 1999; Mata, 2011; Sonnenschein & Munsterman, 2002).

There is evidence that interest in reading decreases through the school years (McKenna, Kear, & Ellsworth, 1995). Since sustained interest in reading requires reading skill development, children who experience difficulties in language activities and struggle with learning how to read will often tend to lose interest and begin to avoid engaging in literacy activities (Onatsu-Arvilommi & Nurmi, 2000; Poskiparta et al., 2003). Engagement is associated with active participation (Baroody & Diamond, 2014) and has been referred to as the visible manifestation of motivation (Skinner & Pitzer, 2012). In their proposed heuristic model, Guthrie and Klauda (2016) suggest that avoidance, which includes minimizing effort and disconnecting from reading tasks, represents the negative dimension of reading engagement. According to some researchers, avoidance is the key problem that must be overcome before children will be able to address their difficulties in learning how to read (Eklund, Torppa, & Lyytinen, 2013).

1.2.2. Reader self-concept

Self-beliefs typically relate to performance-specific beliefs rather than to the actual skill required to perform the task or activity in question. Two widely studied components of students' beliefs about their competence with regard to academic achievement are self-efficacy and self-concept. In line with Bong and Skaalvik (2003), we define self-efficacy as task-specific beliefs and self-concept as general beliefs about one's competence and ability, meaning that we see self-efficacy as a precursor of self-concept in academic-achievement settings (Bong & Skaalvik, 2003). Hence, in this study we define reader self-concept as a student's beliefs about his or her competence and ability as a reader, specifically at the start of formal instruction in school. It has been shown that the most influ-

ential source of a child's self-concept consists of interpretations of past experiences (Bandura, 2002; Bong & Skaalvik, 2003). In line with Renninger and Hidi (2016), we are aware that self-concept has previously been conceptualized as ability beliefs, self-efficacy, or competence, but even so we choose the term "self-concept" in line with Marsh, Wlaker, and Debus (1991) and with studies of beliefs about self among beginning readers (e.g., Chapman et al., 2000; Morgan et al., 2008).

After children have entered school, the reading instruction they receive there begins to influence both their reading skill and their motivation for reading (Bates, D'Agostino, Gambrell, & Xu, 2016). Previous research suggests that the reader self-concept of students with poor emergent literacy skills starts deteriorating during the first year of school (Morgan and Fuchs, 2007; Poskiparta et al., 2003). Morgan et al. (2008) found that even six months into the first grade, students with poor emergent literacy skills already had weaker reader self-concepts than their peers, and that difference then remained stable over a three-year period despite significant improvement in the decoding skills of the children with poor reader self-concepts. Other research has shown that reader self-concepts may start deteriorating even earlier than that. A study of first-graders in New Zealand found that students with poor emergent literacy skills reported more negative reader self-ability beliefs than their peers, even as early as six to eight weeks into the first grade (Chapman et al., 2000). The reader self-concepts reported by those first-graders predicted their level of book reading and their word-recognition and reading-comprehension scores three years later—and at that time the children who had weak reader self-concepts also found reading to be less interesting than their peers did. Given that formal reading instruction in New Zealand does not start until children enter the first grade, these findings suggest that students' reader self-concept may in fact start to develop even before the children have received any formal reading instruction in school or acquired adequate reading skills. The findings of Morgan et al. (2008) and Chapman et al. (2000) suggest that early experiences of failure in learning to read have a lasting impact on a child's self-beliefs, resulting in the emergence of a weak reader self-concept which tends to persist.

1.3. Measuring early motivation for reading

In existing research, measures of reading interest and reader self-concept have generally relied on self-reporting in the case of older students while assessments of younger children have tended to be based on parents' or teachers' reports (Fulmer & Frijters, 2009). However, some researchers have been critical of teacher reporting, suggesting that it assesses students' engagement and behaviour rather than their actual interest in matters of literacy (Baroody & Diamond, 2013). Past research has demonstrated that children can reliably report on their own interest and that their reports are related to their achievement in the relevant area (Chapman et al., 2000; Frijters et al., 2000). Further, given that our study design involved measuring children's interest within the first week of their first school year, it seemed unlikely that their teachers would already have learned enough about the individual students' level of interest and reader self-concept to be able to provide accurate reports. Hence it was decided to obtain the data directly from the students.

Our measure of motivation utilizing two binary choices and picture support, is based on studies using a self-report methodology (Frijters et al., 2000) and a format called the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter, 1982; Harter & Pike, 1984). For the present study, the items were adapted to suit a Norwegian literacy context and the medium of administration was changed from paper to tablet computers. While Frijters et al. (2000) used this format exclusively to mea-

sure literacy interest, we expanded it to include reader self-concept using the same assessment format (McTigue, Solheim, Walgermo, Foldnes, & Frijters, 2018). In designing the self-concept items, we focused on linking them to the students' perceived difficulty within their very first experiences of learning letters and learning how to read (two items) and to comparison with classmates (one item). This methodology can of course be criticized. For example, it is well known that the reliability of any self-report scale tends to increase as students grow older and their self-judgments become more accurate (Jacobs et al., 2002; Wigfield, 1997; Wigfield et al., 1997). The Harter scale has been criticized in past years, in part because it has been widely used. The wide usage derives from being one of the few ways available to enable children at this developmental level complete a response scale. As noted above, the measure used in the present study diverges from the Harter scale in several ways, and the validity of the measures of literacy interest and reader self-concept used in the present study has been specifically addressed in a separate measurement-development paper (McTigue et al., 2018) and found to be satisfactory.

1.4. Learning to read in the Norwegian school system

In Norway, children first start school in August of the calendar year of their sixth birthday. That is when they receive formal reading and writing instruction for the first time. Before starting school, Norwegian children typically attend a *barnehage*, where they can be enrolled from the age of ten months (NDET, 2013). This is similar in some ways to kindergartens and other forms of daycare and preschools but differs from many of them in that no formal reading or pre-reading instruction is provided. In the *barnehage*, children's literacy skills are promoted in different play-like settings, driven to a large extent by the children's own initiative. While some Norwegian school starters will already have learned some letters and a few even already know how to read, it is not expected that they will have been taught any letters before starting school. Accordingly, the term "school starter" in this study refers to a student at school entry who has not received any kind of formal reading and writing instruction. The instruction received once they have started school is based on a "balanced approach" to reading instruction combining phonics and whole-word reading (Pressley & Allington, 2014), owing to the semi-transparent nature of Norwegian orthography.

1.5. The present study

The present study addresses the relationships among literacy interest, reader self-concept and emergent literacy skill in 1171 students, as manifested at the very start of formal reading instruction in school. Our three hypotheses were as follows: First, given the time of testing—at the very start of the first year of school—we expected that the children would be highly interested in literacy-related activities regardless of their level of emergent literacy skill. Second, based on past research suggesting the rapid emergence of poor reader self-perceptions in struggling readers, we predicted that even a few weeks into the first grade an association between reader self-concept and emergent literacy skill would be seen. Third, based on our conceptualization of interest as a precursor of reader self-concept, we expected to demonstrate interconnections between literacy interest and reader self-concept for first-graders, which varied across different levels of emergent literacy skill. More specifically, we investigated whether literacy interest and emergent literacy skill explained reader self-concept synergistically, hypothesizing that interest would moderate the association between reader self-concept and emergent literacy skill.

2. Method

2.1. Participants

The present study is part of an ongoing longitudinal intervention study called On Track (Lundetræ, Schwippert, Solheim, & Uppstad, 2017). The participants are 1171 first-graders (50.7% girls) from 19 urban schools in the western part of Norway. At the first testing point, the children ranged in age from five to six years (68–79 months). They were tested at the start of their first year of school—during their second, third or fourth week. The participating schools were those in the region concerned whose students had scored close to the national average on the national reading assessments in at least two of the three previous years and who expected more than 40 students to be enrolled in the first grade in the fall of 2014. The overall rate of participation was 97.7%, meaning that the sample is strongly representative of the target population. Parents of all 1171 children provided signed informed consent for their children to take part in the study. When it comes to their language background, 75.9% of the participants had two parents who spoke a Scandinavian language (Norwegian, Swedish or Danish) at home, while 16.5% of them came from homes where both parents spoke non-Scandinavian languages.

2.2. Materials and procedures

All students were tested individually. Each test was administered in the students' respective schools by trained testers. Students were assessed outside of their classroom in a quiet, interruption-free location within their respective school building. The subset of tests used in the present study included measures of reading motivation and of reading-related skills, including letter–sound knowledge and phonological awareness. All tests were administered on tablet computers. The tablets used in the study were Lenovo Yoga Tablet 10 portable computers, model 60046, using the Android 4.2 operating system and equipped with DOLBY sound systems and 10.1" LCD screens with a resolution of 1280 × 800 pixels. Each tester adjusted the level of sound and screen light for the individual student according to the actual testing-session conditions. The children responded to the tasks by touching the screen. Exercise items were given prior to each test. The total administration time for all tests for an individual student was approximately 15–25 min. The main characteristics of these tests are described in the sections below; a full description can be found in Lundetræ et al. (2017).

2.3. Measuring literacy interest and reader self-concept

Literacy interest and reader self-concept were measured using a pictorial scale. Each item began with a picture showing, on the left-hand side of the screen, a child who was engaged in a literacy activity. On the right-hand side of the screen, a happy face and a sad face were shown side by side. The tester orally presented the following script: "This girl/boy likes it when someone reads to her/him at home [pointing at the happy face]. This girl/boy does not like it when someone reads to her/him at home [pointing at the sad face]. Which girl/boy is more like you?" The student then chose one of the faces by touching the screen. If the student chose the happy face, the unhappy face disappeared and two circles—one small and one large—appeared below the happy face, whereupon the tester presented the following script: "Do you like being read to at home a lot [pointing at the large circle] or just a little bit [pointing at the small circle]?" Alternatively, if the student chose the sad face, the happy face disappeared and he or she is asked, "Do you think it is very boring when someone reads to you at home [tester pointing at the large circle] or just a little bit boring [tester pointing at the

small circle]?" The student answered these questions by touching either the big or the small circle located below the chosen face.

The possible responses from a student represent two binary decisions, yielding the following response scale ranging from 1 to 4: 4 = happy face, large circle; 3 = happy face, small circle; 2 = sad face, small circle; 1 = sad face, large circle. There are two "gendered" versions of the task: girls are presented with girls' faces and boys with boys' faces. To estimate sample-specific reliability, Guttman's lambda-2 (λ^2) for the literacy-interest scale was calculated to be .67. This estimate of reliability was chosen to avoid some concerns with Cronbach's alpha, and also because in samples of the size in question, λ^2 minimizes the bias of the reliability estimate (Revelle & Zinbarg, 2009; Sijtsma, 2009; Zinbarg, Revelle, Yovel, & Li, 2005). Reliability as measured using Guttman's λ^2 for the three self-concept items was .62. Items of interest and self-concept appeared in random order during the test. To ensure that the children were comfortable using both ends of the self-report scale, we administered two calibration items, one positively weighted and one negatively weighted, before administering the reading-related items.

2.4. Measuring emergent literacy skills

2.4.1. Letter–sound knowledge

Letter–sound knowledge was measured using a matching test where each item began with the auditory presentation of a letter sound, whereupon the student was to indicate which one of four letters appearing on the screen matched that sound. Uppercase letters were used as they were assumed to be more familiar to the students at school entry. Reliability as measured using Guttman's λ^2 for the twelve items included in the letter–sound measure was .83.

2.4.2. Phonological awareness

Two tasks were used to measure participants' phonological awareness: phoneme isolation and phoneme blending. Phoneme-isolation tasks measure the ability to identify the first sound in an auditorily presented word. The students were required to isolate and pronounce the first sound of eight monosyllabic words representing common objects. The tester began with a demonstration using two stimuli. The first demonstration task used the following script: "In the picture you can see the sun. The very first sound in the word *sun* is *s*. Can you say *sun*? What is the first sound in *sun*?" In the second demonstration task, the tester named an object and then asked the student to say the first sound in the word, using the following script: "In the picture you can see the sun. What is the first sound in *sun*?" Corrective feedback was given during the demonstration tasks. Once the student had performed the demonstration tasks correctly, the actual test began, using the same script as in the second demonstration task but without any corrective feedback being given. The test was terminated after two subsequent errors. Reliability as measured using Guttman's λ^2 for the five items of the phoneme-isolation task was .90.

The second phonological-awareness task was a forced-choice task that measured phoneme blending. The children were required to combine phonemes presented auditorily to them in the correct order (e.g., /b//i//l/) to assemble a word (*bil*, meaning "car" in Norwegian). In order to ensure equal time lags between the sounds presented, the phoneme sequences were prerecorded on the tablets, meaning that each phoneme sequence was presented in an identical way to all the children. The test was terminated after two subsequent errors. Reliability as measured using Guttman's λ^2 for the seven phoneme-blending items was .87. Table 1 shows descriptive statistics for subscales relating to emergent literacy skills.

Table 1
Descriptive statistics for subscales relating to emergent literacy skills.

	N	Mean	SD	Min/max
Letter knowledge	1171	9.30	2.90	0/12
Phoneme isolation	1171	3.29	2.00	0/5
Phoneme blending	1171	2.70	2.38	0/7

2.5. Statistical analyses

A measurement model was designed to estimate the latent constructs of literacy interest, reader self-concept and emergent literacy skill. Modelling of these latent constructs using assessment items as manifest indicators allowed the structural models to be created while controlling for measurement error. Subsequently, structural equation modelling (SEM) was used to predict reader self-concept and to test the interaction of skill and interest on reader self-concept in the sample (DiStefano & Hess, 2005). There is a reasonable consensus that the optimal robust estimator in the case of moderately skewed categorical data in large samples is mean- and variance-adjusted weighted least-squares (WLSMV) (Muthén & Kaplan, 1985), which is why that estimator was chosen for the present study. However, maximum likelihood (ML) was used for the moderation analysis, where WLSMV cannot be used. Our dataset included no missing data.

2.5.1. Model-fit indexes

The model fit of the linear structural equations was assessed using the comparative-fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). In line with the recommendations given by Barrett (2007) and associated commentaries in the same issue of *Personality and Individual Differences*, we report the χ^2 fit index, even though χ^2 was likely to be oversensitive in the case of the present study. Given the large sample ($N = 1171$), even small deviations in fit may yield a significant χ^2 test (for a discussion, see Schumacker & Lomax, 2004). For other indexes of fit, we followed recent guidelines provided by Meyers, Gamst, and Guarino (2013). The CFI, expressed on a scale from zero to one with higher values indicating better fit, gives an indication of model fit by investigating the discrepancy between the hypothesized model and the data, while adjusting for sample size within the χ^2 test of model fit. The CFI was deemed to indicate an acceptable fit when greater than .90 and a good fit when greater than .95. The RMSEA, which is also relatively insensitive to sample size, is estimated as the discrepancy between a hypothesized model with the chosen optimal parameter estimates and the population covariation matrix. RMSEA values below .05 with supporting confidence intervals were deemed to indicate a well-fitting model. For the SRMR, values lower than .09 were taken to indicate a good fit. The SRMR is an absolute measure of fit, defined as the standardized difference between the observed and predicted correlations. See Hu and Bentler (1999) for a discussion of fit criteria and reasonable levels to minimize Type I and Type II errors in model-fit evaluation.

Owing to their insensitivity to nonlinear specification when testing interaction effects, conventional test statistics and fit indexes for structural models cannot be used for moderation analyses (Mooijaart & Satorra, 2009; Trautwein et al., 2012). Hence we were not able to produce fit indexes for the structural model that included a latent interaction term. To evaluate the increase in fit for the moderation model relative to the non-interactive structural model for reading and motivation, we instead relied on the Bayesian information criterion (BIC). The difference in BIC values between the two models reflected the relative likelihoods of the two models being correct given the data concerned (Raftery, 1995). A model with a better fit has a lower value. For example, if the difference

Table 2
Items included in the latent variables of literacy interest and reader self-concept.

Latent variables	
Literacy interest	
1	Likes/does not like to look in books and turn over pages in them
2	Likes/does not like to visit the library
3	Likes/does not like it when someone reads to him/her at home
4	Likes/does not like to receive a book as a present
5	Likes/does not like to look in books with a friend
6	Likes/does not like it when the teacher reads aloud to the class
7	Likes/does not like to look in comic books and turn over pages in them
Reader self-concept	
8	Do you find learning the letters to be easy/difficult?
9	Do you find learning to read to be easy/difficult?
10	Do you know as many letters as your classmates?

in BIC values between two models is 10, this indicates that the odds are 150:1 that the model with the lower value has a better fit (Raftery, 1995). All analyses were performed using the Mplus software package (version 7.4; Muthén & Muthén, 2016).

3. Results

3.1. Measurement model for construct validation

Confirmatory factor analysis was used to model the latent constructs of literacy interest, reader self-concept and emergent literacy skill.

3.1.1. Interest and self-concept

Motivation for reading at school entry was modelled using a two-factor model encompassing interest and self-concept. The items included in the literacy-interest and self-concept scales are listed in Table 2. Initial model fitting suggested that the overall fit would improve substantially if the residuals for items 3 and 6 (modification index = 42.304) were allowed to covary. This improvement to the model was justified because the modification indexes were substantial and because there was a strong suspicion that methodological factors were driving the shared variances. Items 3 and 6 share content relating to feelings about being read to, even though they address situations at home and in school, respectively. The refitted model demonstrated good fit to the data: $\chi^2(50) = 3156.16$, $df = 45$, $p < .001$; CFI = .980; TLI = .973; RMSEA = .040 (95% CI = .031–.050).

It is important to note that, taken together, the items included in the interest measure were moderately negatively skewed, with a mean of 24.81 and a median of 26, i.e. a skewness of -1.44 . The skewness of the individual interest items ranged from -1.56 to -2.16 , and their kurtosis ranged from 1.40 to -4.32 . The self-concept items had a mean of 9.33 and a median of 9, with a skewness of $-.58$ and a kurtosis of .15. The skewness of the individual self-concept items ranged from $-.11$ to -1.16 , and their kurtosis ranged from .26 to -1.35 . These item distributions indicate that the first-graders tended to select from the positive end of the self-report scale for interest and from the middle of the scale for self-concept. In other words, they seem to take a positive view of literacy-related activities while having more mixed feelings about their own reading achievement. These distributional issues were well within the performance range for WLSMV for samples of the size studied here (Rhemtulla, Brosseau-Liard, & Savalei, 2012).

3.1.2. Emergent literacy skills

In designing a model to measure emergent reading skill, we initially compared a model of emergent literacy skills with a model that also included actual word reading. The first model included latent factors for letter knowledge (12 items), phoneme blending (6 items) and phoneme isolation (5 items), while the second one

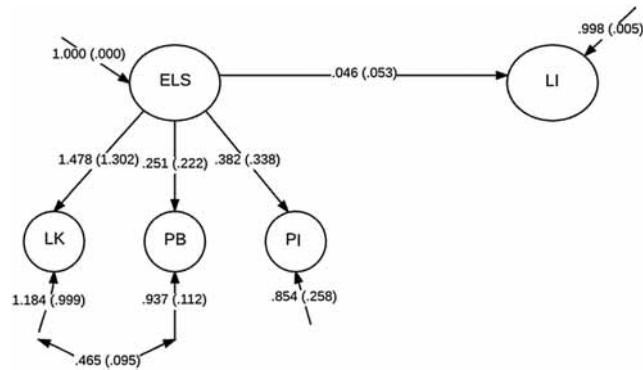


Fig. 1. Structural equation modeling (full standardized solution) of the relationship between school starters' literacy interest and their emergent reading skills. LI = literacy interest, ELS = emergent literacy skills, LK = letter knowledge, PB = phoneme blending, PI = phoneme isolation. Standard errors in brackets.

additionally included a latent factor for single-word identification (8 items). The second model did not converge, and this was due to the inclusion of word identification. Visual inspection of the distribution of word-identification scores suggested that it was not just markedly non-normal but also contaminated or mixed, with multiple modes. The word-identification skills of most of the students appeared to follow a normal distribution but approximately 20 percent of them had scores near the top end of the scale, with a significant proportion at ceiling.

Based on the distributional difficulties and given that the theoretical focus of the present study was on emergent readers, we decided to use the simpler model which encompassed three emergent literacy skills but did not include actual reading skill. When this more focused model was built, initial fitting revealed that, for the phoneme-blending task factor, modification indexes (MI = 78.21) suggested that the error terms for the items *sol* ('sun') and *sur* ('grumpy') should be allowed to covary. The substantial semantic (i.e., antonymic) and phonological (i.e., shared onset) similarity provided a strong justification for modifying the model used to estimate this parameter. At the latent-factor level, both phoneme-blending and phoneme-isolation skills are closely linked to children's ability to identify sounds in spoken words, and for this reason the covariance between these two constructs was included in the model for emergent literacy skills. The final three-factor model of emergent literacy skills with these modifications

demonstrated evidence of good fit: $\chi^2 = 741.52, p < .001, df = 247$; CFI = .956; RMSEA = .041 (95% CI = .038–.045).

3.2. Structural models for early reading motivation and emergent literacy skills

Our first two hypotheses address the relationship between reading motivation and emergent literacy skill at school entry. While we expected to find no connection between literacy interest and skill at this stage, we anticipated a connection between self-concept and skill. In order to explore the association between these latent variables, we created two different models, regressing first the Literacy interest factor and then the Reader self-concept factor onto emergent literacy skills.

The first model, shown in Fig. 1, showed evidence of very good fit: $\chi^2(50) = 541.03, p < .001, df = 435$; CFI = 1.000; RMSEA = .018 (90% CI = .014–.021). However, the standardized coefficient (β) for the path from the latent variable of emergent literacy skills to that of Literacy interest was clearly not statistically significant (.046, with a standard error of .053). This model thus lends support to our first hypothesis, predicting no association between literacy interest and emergent literacy skill.

The second model, shown in Fig. 2, also showed evidence of good fit: $\chi^2 = 424.50, p < .001, df = 325$; CFI = 1.000; RMSEA = .020 (95% CI = .015–.024), and moreover the standardized coefficient (β)

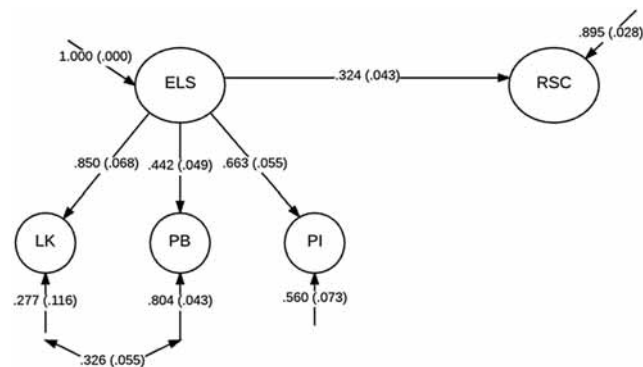


Fig. 2. Structural equation modeling (full standardized solution) of the relationship between school starters' reader self-concept and their emergent reading skills. RSC = reader self-concept, ELS = emergent literacy skills, LK = letter knowledge, PB = phoneme blending, PI = phoneme isolation. Standard errors in brackets.

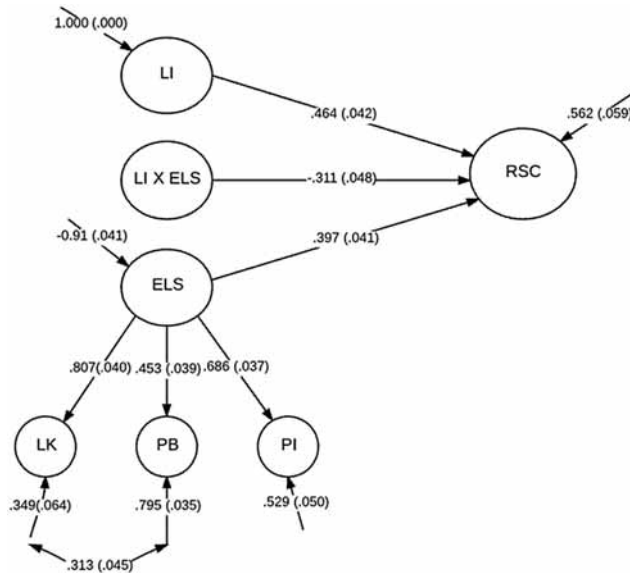


Fig. 3. Structural equation modeling (full standardized solution) of literacy interest as a moderator in the relationship between emergent literacy skills and reader self-concept. RSC = reader self-concept, LI = literacy interest, ELS = emergent literacy skills, LK = letter knowledge, PB = phoneme blending, PI = phoneme isolation. Standard errors in brackets.

for the path from the latent variable of emergent literacy skills to that of Reader self-concept was statistically significant (.324, with a standard error of .043). In other words, this model shows a significant relationship between reader self-concept and emergent literacy skills, supporting our second hypothesis.

3.3. Predicting reader self-concept in school starters

The third hypothesis predicted that literacy interest would moderate the relationship between reader self-concept and emergent literacy skills. We began by confirming the full measurement model of interest, self-concept and skills. Next we compared a structural model that regressed interest and skill onto self-concept (Model A) with a model that included an interaction term to evaluate literacy interest as a moderator of the relationship between reader self-concept and emergent literacy skills (Model B).

The full measurement model demonstrated excellent fit: $\chi^2 = 662.564$, $p < .001$, $df = 486$; CFI = 1.00; RMSEA = .018 (95% CI = .014–.021). Then structural relations were specified, indicating the regression of reader self-concept onto literacy interest and emergent literacy skills (Model A). As expected, since the structural model maintained the same degrees of freedom over the measurement model, this model showed evidence of equivalent fit: $\chi^2 = 662.564$, $p < .001$, $df = 486$; CFI = 1.00; RMSEA = .018 (95% CI = .014–.021). In this model, literacy interest was related to reader self-concept (standardized estimate = .467, $SE = .039$); similarly, emergent literacy skills were also related to reader self-concept (standardized estimate = .362, $SE = .041$).

Model B, which added the interaction of interest and emergent skill, was designed to evaluate literacy interest as a moderator of the relationship between emergent literacy skill and reader self-concept. The additional term demonstrated a strong relationship with the Reader self-concept latent variable (standardized estimate = -.328, $SE = .047$). Since models that include interaction terms do not produce CFI or RMSEA values in Mplus, we instead

relied on the Bayesian information criterion (BIC) to compare Models A and B. Model A had a BIC value of 48171.63 while Model B had a BIC value of 48139.87. Thus the BIC value for Model B was 31.76 lower than that for Model A. This suggests that the odds are more than 450:1 that Model B has a better fit than Model A (Raftery, 1995), which provides evidence that literacy interest functions as a moderator between emergent literacy skills and reader self-concept—a finding which is in accordance with our third hypothesis (Fig. 3).

To investigate the nature of the moderation, an interaction plot was constructed to portray the relationship between reader self-concept and emergent literacy skills at low and high levels of literacy interest (taken to be 1 SD above and 1 SD below the mean, respectively).

Fig. 4 shows the model-implied regression lines for different groups of students. The plot illustrates that having a high or a low level of literacy interest influences the relationship between self-concept and skill across the whole sample of school starters. Students with poor emergent literacy skills and low literacy interest appear to have a weak reader self-concept. However, students with high literacy interest seem to have a strong reader self-concept regardless of their level of emergent literacy skills, i.e., even when these skills are poor.

3.4. Summary of findings

The analysis yielded three major findings which contribute to our knowledge of literacy interest and reader self-concept at school entry: first, consistent with our hypothesis, school starters in general had a strong interest in literacy activities regardless of their level of emergent literacy skill; second, again in line with our expectations, students with poor emergent literacy skills had a weaker reader self-concept than their peers even at school entry; and third, consistent once more with our hypothesis, we found high levels of interest to be linked to a strong reader self-concept for poor emer-

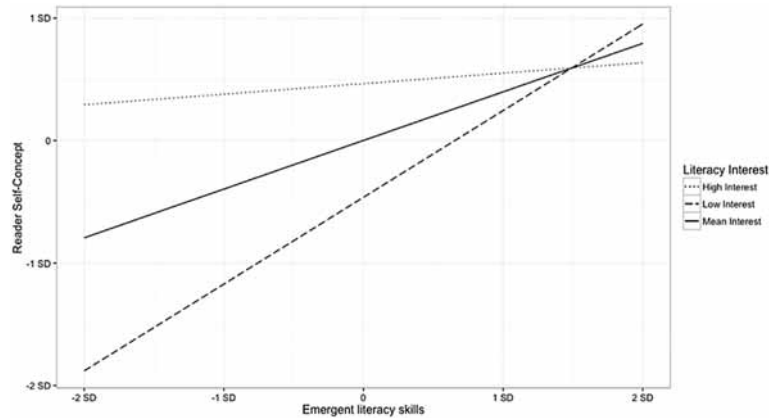


Fig. 4. Interaction plot for high and low levels of literacy interest as moderator.

gent readers. This suggests that, at high levels of literacy interest, the association between emergent literacy skill and reader self-concept is much weaker.

4. Discussion

4.1. Literacy interest and emergent literacy skills at school entry

The 1171 school starters in our study generally reported a high level of interest in literacy-related activities. This result is in line with previous findings among early readers in an American context (Baker & Scher, 2002; Wigfield & Eccles, 1994). Further, we found that the level of interest was not related to the level of emergent literacy skills. Past reports on the association between interest and skill in preschoolers and first-graders are mixed. Researchers studying four- and five-year-old first-graders in the Midwestern United States found no relationship between teacher-reported literacy interest and early reading scores (Baroody & Diamond, 2014); whereas, a study utilizing self-reported literacy interest among Canadian five- and six-year-olds in senior kindergarten found preschool children's interest in literacy-related activities to be related to their emergent literacy skills (Frijters et al., 2000). The findings of Frijters et al. (2000) are also consistent with other studies that used observation or parental reports to measure children's literacy interest (Baroody & Diamond, 2012; Bracken & Fischel, 2008; Deckner, Adamson, & Bakeman, 2006).

Even so, previous research suggests that having a strong interest in literacy activities early on is associated with a good prognosis for future reading motivation and competence. Children who have a well-developed interest engage more frequently in reading activities and also feel more competent as readers (Wigfield & Cambria, 2010), and having a literacy interest at an early stage is known to be a facilitator of later reading comprehension in upper-elementary students (Guthrie et al., 2004). A study by Eklund et al. (2013) focusing on second-graders and presenting early risk factors for reading difficulties found that those students who manifested task-focused behavior and a lack of task avoidance were less likely to have reading difficulties at the end of the second grade than those who were task-avoidant and spent less time on reading activities than their classmates. Eklund et al. (2013) thus conclude that the absence of task avoidance seems to act as a protective factor, and that this underscores the importance of keeping children interested in reading and schoolwork. The findings from the present study indicate that the initial attitude of the school starters is favourable—but

these findings also highlight the challenge facing teachers when it comes to maintaining this high level of interest in all categories of students.

4.2. Self-concept and emergent literacy skills in school starters

A second purpose of the present study was to investigate the reader self-concept of students with different levels of emergent literacy skills. Our findings suggest that, even at school entry, students with poor emergent literacy skills had a significantly weaker reader self-concept than their average- and high-performing peers—even though none of the children had received any formal reading instruction in the *barnehage*. By three years of age, 95% of Norwegian children attend the *barnehage* full-time. While the Norwegian *barnehage* is similar to U.S. and Canadian kindergartens with respect to early literacy standards, they differ in how literacy activities are implemented. In the *barnehage*, literacy activities are meaning-based rather than skill-focused, and to a large degree they are based on free play and build on children's own initiative. Explicit skill instruction is not recommended, even though the curriculum states that teachers must allow children to encounter letters in everyday situations and support children's initiatives towards reading-related activities. This means that Norwegian children will have different emergent literacy skill histories when they begin school.

Previous research has found that first-graders with poor emergent reading skills considered reading to be more difficult, and viewed themselves as less competent readers, than their peers with better skills did (Morgan et al., 2008). The findings of the present study are consistent with those of Chapman et al. (2000) reporting more negative reader beliefs among low-achieving readers within the first two months of school. However, the present study is unique in assessing reader self-concept substantially closer to the time of school entry. Given that school starters are at the very beginning of their formal reading instruction, our findings are consistent with the notion that reading-related self-beliefs are shaped in interaction with the early—if not the very first—experiences of formal school-based reading instruction (Stanovich, 1986). One possible explanation why students with poor emergent literacy skills should have a weaker reader self-concept even at school entry may be that letters, rhymes and other phonological phenomena will to some extent have been part of the children's informal environment in the *barnehage* and at home. Their experiences from these informal learning situations, combined with the taste of formal reading

instruction that they have had during the first weeks of school, may be sufficient for the students to form an initial reader self-concept.

Students, and others, with a positive self-concept are more confident and accomplish more, than those with a less positive self-concept; hence, having a set of positive self-beliefs is seen as a desirable individual characteristic that facilitates the full realization of human potential in different settings (Marsh & Craven, 2006). In the case of reading, a student's self-concept may direct engagement in literacy activities. This may be the reason why high levels of task avoidance and spending less time on literacy activities compared with classmates has been associated with a higher risk of reading difficulties, even in second-graders whose purely cognitive risk is low (Eklund et al., 2013).

4.3. The moderating role of interest

In our study, literacy interest was not linked directly to early reading skills; however, interest moderated the relationship between reader self-concept and skill. Students with a high level of literacy interest tended to show signs of a strong reader self-concept at school entry even if their emergent literacy skills were poor. In this context, it is important to ask what an ideal level of self-concept might be. In the literature, realistic or low levels of self-belief are said to have a negative effect on personal improvement whereas reasonably optimistic self-beliefs are said to favour strong accomplishments, good mental health and optimal human functioning (Bandura, 1995). In other words, applied to reading, it is good for your development if you think of yourself as a somewhat better reader than you actually are. On the other hand, extremely high levels of self-concept may be negative since overconfidence has been linked to both reduced effort and reduced exposure to learning opportunities (Schunk, 2003).

In the literature, there is a well-established correlation between interest and self-concept. It has also been demonstrated that students are likely to be more interested in domains where they believe themselves to be more competent and able (Schiefele, 2009). Renninger et al. (2014) investigated this relationship from the opposite perspective, concluding that when individuals have well-developed interests, they seek to engage in preferred activities more frequently, experience an activity-specific self-concept and value engagement in those activities highly. The present study addresses a new, intriguing aspect of the connection between emergent readers' interest and self-concept. We have shown that levels of interest shape the relationship between skills and self-concept in low-skilled emergent readers: the poor emergent readers in the present study manifested a significantly weaker reader self-concept, *unless* they also had a high level of literacy interest. These results suggest that fostering literacy interest—regardless of a child's absolute skill level—is of critical importance, since interest appears to function as a protector of the early self-concept. Protection of children's self-concept may lead to greater engagement in learning opportunities as early skill is developing, even if progress is slow when compared to peers.

4.4. Classroom implications

The results from the present study show that even at the start of formal reading instruction, the poorest emergent readers have a weaker reader self-concept than their peers, but that a strong literacy interest seems to be linked to a strong reader self-concept even for low levels of emergent literacy. Given the importance of reader self-concept for later reading development, first-grade teachers should make an effort from day one in school to enhance their students' reader self-concepts both by arousing literacy interest and by fostering students' reader self-concepts directly.

As described above, children's interest emerges and develops as a result of support and challenges from the environment and as a result of the feelings they have for the task in question, the value they place on it and the knowledge they acquire about it (Renninger & Hidi, 2016). To foster literacy interest in different groups of readers, the emphasis placed on each of these components may have to vary depending on the students' starting positions. However, it is important to note that even students with a high level of literacy interest need support to maintain and further develop their interest (Renninger & Hidi, 2016).

At early stages of reading development, situational, externally driven interest plays a greater role than individual, internally driven interest (Alexander, 2005). As individuals progress towards greater reading competence, internally driven interest becomes increasingly more important. This is often considered as an effect of multiple experiences with situational interest; hence one of the most widely recognized ways of fostering internal interest is to trigger external (situational) interest (Palmer, 2004, 2009).

A review of the research also suggests that other effective ways for teachers to enhance internal motivation in classrooms include the use of rewards, assessment and tasks at the appropriate level of difficulty (Stipek, 1996), but it is important in this context that rewards are used to provide information and indicate performance and that assessment is used to provide students with information about their progress (i.e., about how to optimize their methods for learning). Further, teachers should ensure an optimal level of challenge, meaning that school starters should be given tasks that are on a par with their level of early reading skill and also be offered a choice among different task formats. In addition, the tasks should be differentiated over time so as to avoid that children feel that their tasks are becoming redundant or uninteresting (Guthrie et al., 2006). As interest is seen as a predisposition to self-concept, there are reasons to believe that fostering literacy interest will also contribute to the development of reader self-concept (Stipek, 1996; Wigfield & Cambria, 2010). Additionally, praising children's effort rather than their ability seems to have a positive impact on their self-perceptions and to send them on the path towards hard work and greater success (Dweck & Master, 2009). By focusing on process-oriented rather than person-oriented praise, teachers and parents can thus help children learn how to take on challenges and how to persist in the face of setbacks.

4.5. Concluding remarks

Overall, the results of the present study add to the findings from existing research into literacy interest and reader self-concept for children at the very beginning of formal reading instruction in school. The school starters studied were generally very interested in literacy activities, regardless of their level of emergent literacy skills, but even at this early stage the poor emergent readers tended to have a weaker reader self-concept than their peers. Given the consistent correlation between self-concept and skills, the findings of the present study supplement past evidence suggesting that, besides the linguistic prerequisites involved, the process of learning to read also has strong motivational and emotional dimensions (Green, Nelson, Martin, & Marsh, 2006). As previous research indicates that experiences from reading instruction and reading activities in school will continue to influence students' reader self-concepts (Bandura, 2002; Burden & Burdett, 2005), a weak reader self-concept early on should give cause for concern. One associated question that still needs to be answered is what the consequences are of having a strong literacy interest and a strong reader self-concept but poor emergent literacy skills at school entry—a combination featured by some of the participating students. Is the self-concept of these poor emergent readers unrealistically high, leading to overconfidence, reduced effort and falling

behind in school? Or will the strong reader self-concept of these poor emergent readers instead have a protective function when it comes to the development of their reading skills, in that their high level of interest makes them likely to devote greater effort to reading and to read more often than their peers who are less interested in literacy-related matters? Whatever the case may be, the findings of the present study suggest, in line with recent longitudinal studies (Bates et al., 2016; Cartwright, Marshall, & Wray, 2016), that there should be an increased focus on early motivation for reading from the very start of formal reading instruction in school.

Acknowledgements

The On Track project is supported by the Research Council of Norway, Research Program “FINNUT”, Grant number 237861. We would like to thank all participating families, schools, and the principal investigators Per Henning Uppstad and Kjersti Lundetræ for their contribution to the study.

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