

# The role of pre-reading skills in the development of task orientation and interest in reading and play from preschool to kindergarten

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**ABSTRACT:** This study evaluated 130 Finnish-speaking children's pre-reading skills, teacher-rated task orientation, and self-rated interest in adult-given tasks, reading, and play activities in their day care. In addition, parents rated their children's interest in reading and play activities at home. Five groups of children with different pre-reading skills were identified during preschool and kindergarten: *high, above-average, developers, below-average, and low*. The results showed that children with low pre-reading skills displayed lower task orientation than did the four other groups in adult-guided learning situations in day care. Children's self-rated interest in adult-given tasks, reading, and play activities in day care did not differ across time despite clear differences in pre-reading skills. The parent ratings revealed differences in the children's interest in reading activities at home. Children with low pre-reading skills were also the least interested in reading. The results demonstrate that pre-reading skills are associated with adults' perceptions of children's task orientation and interest but not with children's own ratings of their interest in day care. The results highlight the need to pay increasing attention to the ways in which the social environment in day care and at home can best capture and take account of children's interest in activities and to provide high-quality early support for each child's motivation and learning.

**Keywords:** *Task orientation; interest in adult-given tasks, reading, and play; pre-reading skills; longitudinal study*

## Introduction

A certain level of language proficiency enables children to initiate and regulate their behavior; language also creates opportunities for learning and cultivates interest in learning (for a review, see Chow et al., 2018). Previous studies have shown that the development of children's reading skills is associated with their task-oriented motivation (e.g., Berhenke et al., 2011; Lepola et al., 2016) and with their interest in learning and classroom activities (e.g., Viljaranta, 2017). In fact, even pre-reading skills are associated with six-year-old children's task-oriented motivation (Lepola, 2004) and interest in reading (Viljaranta et al., 2017). However, less is known about whether children's profiles, as based on their pre-reading skills from preschool to kindergarten, are associated not only with the teachers' perceptions of the children's task-oriented motivation but also with their own interest in adult-given tasks, in reading, and in play activities in their day care or home settings.

Educational and social environments, such as day care and the home, have a significant impact on children's language and behavior. Children's activities in those environments are typically promoted through social interaction, which mainly occur through adults' verbal instructions and guidance (Chow et al., 2018). We draw on an ecological-transactional model (Chow et al., 2018) to better understand the extent to which children's pre-reading skill trajectories are reflected in motivational factors. The ecological aspect of the model refers to the bioecological model of human development (Bronfenbrenner & Morris, 2006), which depicts child development as a function and interplay of different social spheres (e.g., micro-, meso-, and macrosystems), and is also associated with changes across time (chronosystem). The bioecological model also points to differences between resource characteristics (e.g., language skills), demand characteristics (e.g., literacy interest), and force characteristics (e.g., motivation) (Grolig, 2020, p. 4). In the present study, we used teacher ratings and children's self-ratings in day care, and also parents' ratings at home, to capture an assessment of motivation in two contexts that are both important to a child's development. According to the transactional view (Sameroff, 2009), children's strengths and weaknesses in language and reading-related skills over time are critical to their social interaction and to the subsequent development of motivation. The transactional model stresses the reciprocal nature of child development in terms of the active roles that both the child and the environment play in shaping each other over time. Thus, for instance, a child with a strong task orientation will tend to get positive adult reactions and task-related feedback, which will further increase the child's tendency to approach and explore the challenging aspects of a task. In contrast, the child with lower language skills and less interest in adult-guided tasks or shared book reading may find these socially guided learning opportunities to be

more stressful and challenging, and the child will therefore show greater interest in focusing on play activities that are less constrained by language and adults.

Evaluating these two aspects of children's motivation (i.e., task orientation and interest) is related to the well-known distinction between the general or dispositional (the trait) and the situational or task-specific (the state) motivation (Salonen et al., 1998). Another and more practical rationale for using two motivation constructs in tandem was that we wanted to examine whether the link found in earlier studies (e.g., Lepola et al., 2016) between early reading skills and teacher-rated motivation was also evident in the development of children's task value or interest in adult-guided and free-choice activities in different contexts. The study was also motivated by the findings of Viljaranta et al. (2017), who used person-oriented analyses to show six groups, each having a different constellation of reading skills, interest, and self-concept, from kindergarten to grade 2. It is therefore important to study longitudinally the extent to which different aspects of children's motivation are determined by language and reading-related skills already with young children in day care.

In this study, our first aim was to identify different groups of pre-reading skills (i.e., reading precursors and language comprehension skills) and to examine the role of pre-reading groups in the formation of task orientation between the ages of four (preschool) and six years (kindergarten). The second aim was to analyze the development of children's interest in adult-given tasks, in reading, and in play in day care and at home from ages four to six as a function of their pre-reading skills groups.

### **Children's pre-reading skills and task orientation**

With regard to young children's task-oriented behaviors, it has been shown that children with different levels of pre-reading skills may have different behavioural approaches to learning tasks, such as task-oriented or task-avoiding (Chow et al., 2018). For example, previous research has shown that children's reading comprehension is related both to their behavior and to affective factors (Aaron et al., 2008; Cartwright et al., 2016; Georgiou et al., 2013; Guthrie & Klauda, 2014). In particular, it has been reported that children's oral language skills are already associated with task-oriented behavior at the age of four (Laitinen et al., 2017). Furthermore, Lepola et al. (2016) revealed the emergence of a bidirectional association between components of reading skills, such as reading precursors and oral language comprehension skills (e.g., the Simple View of Reading [SVR]) (Gough & Tunmer, 1986; Hoover & Gough, 1990), and task orientation between the ages of four and nine years.

Although research has shown that pre-reading skills and task orientation are related to each other before kindergarten, less is known about the association between different pre-reading skill combinations and task orientation from the ages of four to six years. We surmise that children's success in learning the basics of reading provides them with positive feedback about the learning situation and thereby strengthens their mastery goals, which are reflected in their task-oriented behavior. For example, Lepola (2004) found four distinctive pre-reading groups based on the SVR from kindergarten to grade 1. The findings showed that the low pre-reading group, that is, children with low phonemic and language comprehension skills at age five, exhibited significantly lower task orientation in grade 1 than did their age-mates in the high pre-reading group, that is, children with high initial phonemic and language comprehension skills. In addition, the children with high pre-reading skills showed increased task orientation over time, whereas a pattern of decreasing task orientation was observed among children with low pre-reading skills.

Poskiparta et al. (2003) studied the developmental differences between reading skills and task orientation. They identified three different reading groups in grade 2, categorized in terms of decoding, spelling, and reading comprehension. The results showed that poor readers displayed less task-oriented behavior than did good decoders and good readers at the age of six (kindergarten). Furthermore, in grades 1 and 2, when poor readers faced difficulties in learning to read and write, their teachers rated them as less task oriented than good decoders and good readers. Interestingly, these studies (Lepola, 2004; Poskiparta et al., 2003) also reported that children's strengths in both learning to read and comprehending instructions were important resources in coping with the new learning challenges already faced during kindergarten. These motivational differences among children as a function of early reading trajectories were mainly based on teachers' ratings. This calls for broadening the framework and the assessment of motivation to also take account of children's own perspective and interest in adult-guided and free-choice activities in day care and also at home.

With regard to learning task, according to Ford (1992) and Reeve (2012), motivation can be described in terms of personal goals, emotions, and agency beliefs that direct, energize, and regulate individuals' behaviors. The definition of young children's motivation has broadened to involve social (e.g., significant others), emotional, and behavioral factors (e.g., interest, frustration, and persistence; Berhenke, 2013). Young children's motivation and behaviors have also been approached from the perspectives of exploration and curiosity, such as mastery-related cognition (e.g., MacTurk et al., 1995), mastery versus helplessness in goal orientations (Diener & Dweck, 1978), and intrinsic versus extrinsic orientations (Harter, 1981). Salonen et al. (1998) viewed task orientation as a basic adaptive goal or orientation when coping with the demands of a learning task. Task

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orientation can be seen as the optimal state for learning and development; in this context, it refers to children's intrinsic motivation to approach, explore, and master the learning tasks assigned by a teacher or an adult. In this study, we measured children's task orientation in learning situations by teacher ratings; for example, the teacher rated whether a child "want[ed] to continue the tasks" (see more detail in Laitinen et al., 2017, p. 71). A framework also used in the conceptualization of motivation focuses on children's interest in different learning situations or tasks (e.g., Deci & Ryan, 1985; Schiefele, 1991). Thus, young children's task-focused motivation also reflects their subjective task- or situation-related interpretations. The extent to which differences in young children's task-focused motivation and their interest in different activities are determined by early pre-reading skills is important to study.

### **Pre-reading skills and interest**

Children's pre-reading skills play a role not only in their task orientation but also in their interest in or task-specific motivation for particular activities, such as reading and play. For instance, low levels of pre-reading skills in children have been associated with low interest in reading activities in kindergarten (Salminen et al., 2018). Pakarinen et al. (2010) detected a positive association between pre-reading skills and interest in play activities as an aspect of motivation. Thus, interest seems to support children's learning activities through its effectiveness in prompting exploration and constructive endeavors (Izard, 2007). For example, positive emotions, such as experiences of success, self-perception of ability, and application of effort in challenging tasks, increase liking and enjoyment and act as a "buffer" in coping with failures (Ainley, 2012). Although interest has been identified as one factor that is reflected in task-oriented behavior (e.g., Tapola et al., 2014), the importance of children's task orientation and task-specific interest is less well understood in children prior to kindergarten.

Therefore, in addition to task orientation, we explored task value and state-like motivation, that is, subjective interest in various activities. In this context, questions arise regarding how interested children are in their different activities and academic tasks (i.e., adult-given tasks, reading, and play), how eagerly they perform these activities and tasks, and how much they enjoy participating in these activities and tasks over time. Prior research has used different terms to describe children's feelings, attractions, and beliefs regarding their different tasks, such as interest (Hidi & Renninger, 2006; Schiefele, 1991), preference (Stipek, 2002), expectancies for success, and task values (Wigfield & Eccles, 2000). Interest is defined here as a child's emotional valence and attraction toward certain tasks, and it is evaluated in terms of how readily they will perform such activities and tasks and how much they enjoy participating in these activities and tasks over time.

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Previous studies have shown that two- to five-year-old children who were able to complete play tasks (i.e., puzzles and nested cups) were likelier to choose and want to complete a similar task than those children who had failed in the play task (Stipek et al., 1992). Specifically, children have been found to have a greater preference for challenging tasks when they anticipate success in activities (Stipek et al., 1995). Hence, the constructs of interest in the activities align with self-determination theory (Deci & Ryan, 1985), emphasizing the importance of children's need for a sense of competence and control in task situations. Berhenke (2013) also pointed out the role of task value in children's activities, finding that three-, four-, and five-year-old children's experiences (e.g., persistence, frustration, and satisfaction) in achievement-related behavior and cognition (i.e., challenging puzzle tasks) were meaningfully connected to their responses to interview questions regarding the value of the task. We focus on interest because only a few studies have examined the importance of children's pre-reading skills and interest levels in their activities in day care and at home.

Viljaranta et al. (2017) followed children from kindergarten to grade 2 and identified six groups with different combinations of reading skills, interest level, and self-perceived ability. The children's interest level in reading-related tasks (see also ARMI test material; Lerkkanen et al., 2008) in kindergarten was assessed by interviewing the children and asking them to point to one of five faces, ranging from a big frown to a big smile. The findings showed that at kindergarten age, children with high reading skills also exhibited a high interest in reading activities, whereas children with low reading skills exhibited a low interest in reading activities. Similarly, Cartwright et al. (2016) found that first and second graders' reading skills contributed significantly to their self-rated reading value and reading activity at home (i.e., "How much do you read by yourself at home?").

When investigating developmental differences before kindergarten, Martin et al. (2013) found that children's interest and persistence, as rated at age three by teachers during a series of cognitive tasks led by assessors, were associated with the children's early academic skills (such as language comprehension) at age five. In addition to teacher-rated and children's self-rated interest in various activities, parents were also asked to rate their children's interest. For instance, Torppa et al. (2007) studied children with and without familial risk for dyslexia in relation to their interest in reading activities at home. They used parent ratings and children's preference scores for all interests (e.g., adult-given tasks, reading, and play) to examine children's interest in reading. The findings among children at risk for dyslexia showed that vocabulary skills (receptive and expressive) at the age of three and a half were significantly associated with children's reading interest at the age of five. However, among the control group with no familial risk of dyslexia, the children's vocabulary skills were not related to their later reading interest.



Taken together, the findings above suggest that children's reading achievement and their acquisition of pre-reading skills affect both their task-oriented behavior (e.g., Lepola, 2004) and their interest in reading activities (e.g., Viljaranta et al., 2017). Therefore, it is important to study the extent to which early differences in pre-reading skills are associated with children's task-oriented behavior and their interest in academic and play activities in day care and at home. Furthermore, little is known about the similarities between teacher ratings, children's self-ratings, and parents' ratings of children aged four to six in different pre-reading skills groups. Exploring teachers' ratings of task orientation gives a more general view of the behavioral, emotional, and social dimensions of children's approaches to and management of adult-guided learning situations in day care (Lepola, 2004). In addition, children's own interest in reading and play gives a more task-specific view of the extent of children's interest in reading and play in day care and at home. From the free-choice activity perspective, it also shows how children's academic skills (i.e., their pre-reading skills) are associated with their general and task-specific motivation in learning situations.

The present study was conducted in Finland, where preschool and kindergarten are considered the foundations of the education system. There, the most important tasks include encouraging children's interest in learning activities through play and supporting children's individual potential in close collaboration with parents (see Finnish National Agency for Education, 2019; Finnish National Board of Education, 2016). Young children's task-oriented behavior and interest in activities in both day care and home settings were chosen as the research topic because the teachers', children's, and parents' ratings together form the foundations for teacher-parent collaboration. Before school age, children's immediate environments play a major role in supporting their task-oriented motivation and interest. Hence, identifying and understanding children's task-oriented motivation and interest can assist in strengthening children's enthusiasm by encouraging and providing new and more challenging stimuli (see Ainley, 2013). For example, adult-guided and free-choice activities are undoubtedly different situations in which cognitive competence and motivation can result in different ways of approaching the activity. Both of these activities are also natural part of children's daily life/experiences in preschool and in kindergarten.

## Research questions

In this study, we sought answers to the following questions:

1. What kind of pre-reading skill groups can be identified from age four to age six years based on reading precursors and language comprehension skills?

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2. How do pre-reading skill groups differ in terms of teacher-rated task orientation in day care?
3. How do pre-reading skill groups differ in terms of children's self-rated interest in adult-given tasks, reading, and play activities in day care?
4. How do pre-reading skill groups differ in terms of parent-rated reading and play activities at home?

In light of the previous research, we hypothesized that children aged four to six years with well-developed pre-reading skills would show stronger task-oriented behavior, especially at six years (Lepola, 2004). We also expected that children with developmental delays in pre-reading skills would already exhibit a lower level of interest in reading-related activities at the preschool and kindergarten ages (Torppa et al., 2007). Finally, on the basis of other studies (e.g., see Brunstein & Heckhausen, 2010; Cartwright et al., 2016; Martin et al., 2013; Salminen, et al., 2018; Torppa et al., 2007; Viljaranta et al., 2017), we anticipated that children's pre-reading skills would reflect their interest in adult-given tasks, reading, and play.

## Method

### Participants and context

The sample for this longitudinal study comprised 130 typically developing Finnish children who were followed from age four (preschool) to age six (kindergarten). Informed consent forms were returned by the parents of all participating children. The mean age of the children at the beginning of the study was 50.5 months (range = 45–56 months). The children were recruited from 16 day-care centers located in socioeconomically varied districts in two towns with 176,000 and 14,500 inhabitants, respectively. For this study, 96% of children from the selected kindergartens were involved. Those from immigrant backgrounds and those who had special difficulties with linguistic skills did not participate. Children's pre-reading skills and task orientation were assessed individually each year in the middle of the fall term at ages four, five, and six. A child's interest in reading and play activities in a day-care center were evaluated by self-rating and at home by parents' ratings ( $n = 90$ ) at ages four and six.



## Data collection

### *Children's pre-reading skills*

*Reading precursors.* To form a composite score of reading precursors, we evaluated children's phonological awareness and letter knowledge (see Lepola et al., 2016). Phonological awareness was measured at ages four and five using rhyme and alliteration tasks (Silvén et al., 2002) involving the recognition of words that end or begin with a common sound pattern. Both tasks were scored on number of correct items out of 10. At age six, initial phoneme recognition was tested (Lerkkanen et al., 2008). Values of Cronbach's alphas for phonological awareness at ages four and five were .83, and .82, respectively, and for initial phoneme recognition at age six, it was .83. Letter knowledge was assessed at ages four, five, and six by asking children to name 29 uppercase letters, shown one at a time (Lerkkanen et al., 2008); letter knowledge was scored as the number of correctly named letters. Values of Cronbach's alphas for letter knowledge at ages four, five and six, were .80, .78, and .79, respectively. Reading precursor composites were derived by first standardizing the variables to *z*-scores and then computing the mean scores for phonological awareness and letter knowledge (from ages four to five,  $r = 0.80$ ,  $p < 0.01$ ; from ages five to six,  $r = 0.78$ ,  $p < 0.01$ ).

*Language comprehension.* Children's listening comprehension and vocabulary knowledge were evaluated to form a composite score of language comprehension. Listening comprehension was assessed using a test developed by Vauras et al. (1995). A narrative text of 91 words ("Misi-cat goes hunting") was used (Vauras et al., 1995). The text was read aloud twice in a neutral tone by the researcher, and the children were instructed to listen carefully in order to answer questions about the content. Listening comprehension was evaluated by means of a retelling task and four prompted questions (see Lepola et al., 2016). All answers were written down and audio recorded. Points for the parts were summed (theoretical range of 0–17): a higher score indicated greater accuracy and quality of understanding of the main idea in the question and the text. Values of Cronbach's alphas for listening comprehension at ages four, five, and six, were .78, .77, and .80, respectively.

Children's vocabulary knowledge was measured at four, five, and six years of age using a word definition test (Silvén & Rubinov, 2010). This was an adaptation of the vocabulary test from the Finnish Wechsler Intelligence Scale for Children (WISC-III; Wechsler, 1999). Words were presented to each child one at a time, and the examiner told the child, "I will say words to you. Listen carefully and tell me what the word means. What is a dog (Finnish practice item)? What does it look like? What can it do?" Points for the test words were summed (theoretical range 0–64 for 32 test words), a higher score indicating better mastery of word meanings. Values of Cronbach's alphas for word definition at ages four,

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five, and six, were .80, .78, and .78, respectively. Language comprehension composites were derived by first standardizing the variables to z-scores and then computing the mean scores for listening comprehension and vocabulary knowledge (from ages four to five,  $r = 0.53$ ,  $p < 0.01$ ; from ages five to six,  $r = 0.61$ ,  $p < 0.01$ ).

### ***Teacher rating of task orientation***

Preschool and kindergarten teachers evaluated children's task orientation on a scale with three items (Laitinen et al., 2017; Lepola et al., 2013). Task orientation assesses a child's tendency to approach, explore, and master a learning task. Each teacher was first asked to recall art and craft situations and new task activities that the children had been asked to perform. They were then asked to rate the children's behavior on a 7-point Likert scale, ranging from 1 = *This behavior does not occur at all* to 7 = *The behavior occurs most of the time or always*. The instructions emphasized that "the focus of assessment is not free play or the children's language abilities but the way the children adapt to the situation guided by an adult." The theoretical and empirical basis for the scale can be found in Salonen et al. (1998), Vauras et al. (2009), and Laitinen et al. (2017). Values of Cronbach's alphas for task orientation at ages four, five, and six were .80, .83, and .79, respectively.

### ***Children's interest by self-rating and parent rating***

We used the interest value scale for children (see ARMI test material; Lerkkanen et al., 2008; see also Torppa et al., 2007) to measure children's interest in particular activities in day care by interview at ages four and six. In the present study, five items measured children's activity interests (i.e., "liking" a particular activity) in day care. Of these activities, two items concerned an interest in reading (*How much do you like listening to story reading in day care? How much do you like browsing picture books and children's magazines in day care?*). Another two dealt with interest in play (*How much do you like playing with toys in day care? How much do you like playing outdoor games in day care?*). One dealt with interest in adult-given tasks (*How much do you like doing adult-given tasks in day care?*).

Children's interest in adult-given tasks, reading, and play activities in day-care center were examined, first, by showing them a picture of a particular activity. Secondly, the question was read aloud to them. Thirdly, they were asked to point to one of the five schematic drawing faces ranging from an unhappy face to a happy face (from very negative to very positive), which best represent their interest (i.e., "liking") in a particular activity (1 = *I do not like it at all/I dislike those activities*; 5 = *I like it very much/I really enjoy those activities*).

In addition, parents were asked to evaluate without any schematic drawings their children's interest in reading and play activities with the same items at home at ages four and six. Each item was rated on a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*very much*). To estimate the children's interest in reading and play activities, we created a composite interest score by calculating the mean of the two items concerning particular activities (reading and play) at home and in day care.

### ***Data analysis***

To determine how individual differences in children's pre-reading skills (composite scores of reading precursors and language comprehension) relate to development of task orientation and the children's interest in adult-given tasks, reading, and play, we identified pre-reading subgroups by a traditional cluster analysis, K-means, in IBM SPSS Statistics ver. 26. In our previous study, we used latent profile and latent transition analysis to identify different motivation profiles among young children (Laitinen et al., 2017). In addition, Viljaranta et al. (2017) found several profiles from kindergarten to grade 2 by using the ISOA procedure. In this study, we used K-means cluster analysis, which partition observations into k clusters in which each observation belongs to the cluster with the nearest mean. By K-means analysis, we identified five different pre-reading subgroups based on six standardized composite scores of reading precursors and language comprehension. This number of pre-reading subgroups was based on the model of SVR (Gough & Tunmer, 1986; Hoover & Gough, 1990), previous study (e.g., Lepola, 2004; Viljaranta et al., 2017), and the size of each group as well as meaningful interpretation of the relative changes of each group across ages. We then conducted a repeated measures and univariate analysis of variance (ANOVA) and post hoc tests to explore the development of task orientation (by teacher rating) and interest (by self-rating and parent rating) among the pre-reading subgroups.

## Results

Figure 1 summarizes our main results. It shows the development across preschool and kindergarten of five different pre-reading skill groups and the role of those groups in the formation of teacher-rated task orientation, as well as the children's self-rated interest in a day-care center and parents' ratings at home. All the results in Figure 1 are presented by standardized scores (i.e., z-scores).

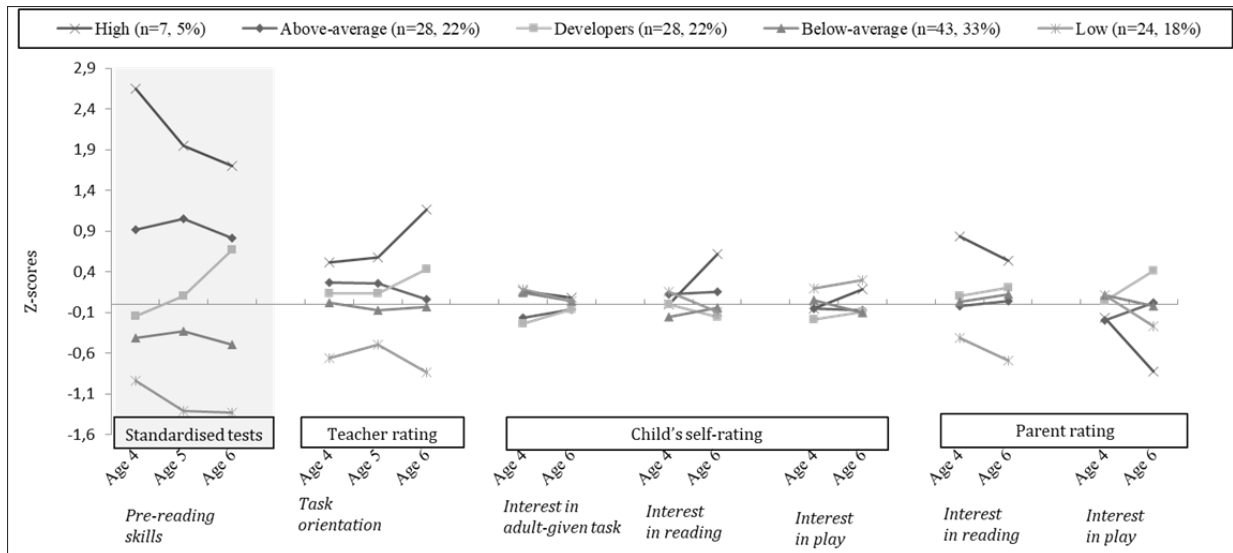


FIGURE 1 Development of pre-reading skill groups' task orientation and interest in day care (n = 130) and at home (n = 90)

The results reported below address our research questions. First, we describe the different pre-reading skill groups. Second, we report the associations of pre-reading skill groups to task orientation in children from ages four to six. Third, we report findings among pre-reading skill groups in the development of children's self-rated interest in adult-given tasks, reading, and play in day care. Fourth, we report their interest in reading and play activities at home.

### Pre-reading subgroups across ages four, five, and six

Children from ages four to six were placed into five groups through K-means clustering. By means of this procedure, we wanted to examine children's early differences in the components of reading skills and the role of such differences in teacher-rated task orientation and children's self-rated interest.

The first group of children (n = 7) was labeled the *high* pre-reading group (z-scores over 1.0). Their reading skills decreased from four to six years of age relative to all others when

changes were examined with a paired sample *t*-test [ $t(6) = 2.85, p = .03$ ]. In addition, the reading skills of the second group of children, labeled the *low* pre-reading group (z-scores under  $-1.0$ ) decreased from four to six years of age relative to all others [ $t(23) = 2.47, p = .02$ ]. The third group, labeled the *above-average* pre-reading group (z-scores from  $0$  to  $1.0$ ), comprised children whose skills remained at the same level to all others across ages four to six [ $t(27) = .80, p = .43$ ]. The fourth group, labeled the *below-average* pre-reading group (z-scores from  $0$  to  $-1.0$ ), consisted of children whose skills also remained at the same level to all others across ages four to six [ $t(42) = 1.01, p = .32$ ]. Finally, the fifth group, labeled the *developers* pre-reading group (z-scores from  $-1.0$  to  $1.0$ ), contained children with average pre-reading skills at age four whose skills had improved by the age of six [ $t(27) = -6.36, p < .01$ ].

### **Task orientation as a function of pre-reading groups**

A  $5 \times 3$  (pre-reading group  $\times$  time) ANOVA was computed for task orientation. According to Table 1, a significant main effect of the pre-reading group for task orientation was found. Figure 1 shows that task orientation differed among pre-reading groups. This means that children from different groups were perceived by teachers to approach and cope with learning situations in different ways. Table 2 shows those differences in task orientation among the pre-reading groups.

Neither a significant main effect of time nor interaction effect of the pre-reading group was found for task orientation (see Table 1). Thus, the results indicate the level of task orientation did not change within each pre-reading group from age four to age six.

TABLE 1 Differences between reading groups in task orientation and interest in day care and at home across ages

Variable	ANOVA						POST HOC		
	Time	Group	Time x group	Age 4	Age 5	Age 6	Age 4	Age 5	Age 6
<b>Teacher rating</b>									
Task orientation	$F(2,250)=.46^{ns}$ , $\eta^2=.01$	$F(4,125)=8.40^{***}$ , $\eta^2=.21$	$F(8,250)=1.36^{ns}$ , $\eta^2=.04$	$F(4,125)=4.08^{***}$ , $\eta^2=.12$	$F(4,125)=2.88^*$ , $\eta^2=.08$	$F(4,125)=10.37^{***}$ , $\eta^2=.25$	High>Low* A-a>Low** Dev>Low* B-a>Low*	A-a>Low*	High>Low*** High>A-a* High>B-a** A-a>Low** Dev>Low*** B-a>Low**
<b>Child's self-rating</b>									
Interest in adult-given task	$F(1,125)=.00^{ns}$ , $\eta^2=.00$	$F(4,125)=.93^{ns}$ , $\eta^2=.03$	$F(4,125)=.27^{ns}$ , $\eta^2=.01$	$F(4,125)=1.10^{ns}$ , $\eta^2=.03$	-	$F(4,125)=.09^{ns}$ , $\eta^2=.00$	ns.	-	ns.
Interest in reading	$F(1,125)=.34^{ns}$ , $\eta^2=.00$	$F(4,125)=.70^{ns}$ , $\eta^2=.02$	$F(4,125)=.90^{ns}$ , $\eta^2=.03$	$F(4,125)=.47^{ns}$ , $\eta^2=.02$	-	$F(4,125)=1.08^{ns}$ , $\eta^2=.03$	ns.	-	ns.
Interest in play	$F(1,125)=.16^{ns}$ , $\eta^2=.00$	$F(4,125)=.96^{ns}$ , $\eta^2=.03$	$F(4,125)=.28^{ns}$ , $\eta^2=.01$	$F(4,125)=.53^{ns}$ , $\eta^2=.02$	-	$F(4,125)=.81^{ns}$ , $\eta^2=.03$	ns.	-	ns.
<b>Parent rating</b>									
Interest in reading	$F(1,85)=.24^{ns}$ , $\eta^2=.00$	$F(4,85)=2.92^*$ , $\eta^2=.12$	$F(4,85)=.51^{ns}$ , $\eta^2=.02$	$F(4,85)=1.68^{ns}$ , $\eta^2=.16$	-	$F(4,85)=2.82^*$ , $\eta^2=.12$	ns.	-	Dev>Low*
Interest in play	$F(1,85)=.54^{ns}$ , $\eta^2=.01$	$F(4,85)=1.14^{ns}$ , $\eta^2=.05$	$F(4,85)=1.39^{ns}$ , $\eta^2=.06$	$F(4,85)=.41^{ne}$ , $\eta^2=.02$	-	$F(4,85)=2.14^{ns}$ , $p=.08, \eta^2=.09$	ns.	-	ns.

Note. ANOVAs and Post hoc (Tukey HSD) tests were \* $p > .05$ , \*\* $p > .01$ , \*\*\* $p > .001$ . Only the significant Post hoc results are included to the table: High = High reading group, A-a = Above-average reading group, Dev = Developers, B-a = Below-average reading group, Low = Low reading group

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TABLE 2 Means and standard deviation of task orientation and interest in day care and at home among pre-reading groups at the ages four, five, and six

Variable	<i>HIGH</i>	<i>ABOVE-AVERAGE</i>	<i>DEVELOPERS</i>	<i>BELOW-AVERAGE</i>	<i>LOW</i>
	(n = 7)	(n = 28)	(n = 28)	(n = 43)	(n = 24)
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
<b>Age 4</b>					
<b>Teacher rating</b>					
Task orientation	4.29 (1.39)	3.95 (1.57)	3.75 (1.31)	3.60 (1.24)	2.68 (.99)
<b>Child's self-rating</b>					
Adult-given tasks	4.00 (1.41)	3.50 (1.55)	3.39 (1.71)	3.98 (1.44)	4.04 (1.33)
Reading	3.57 (.98)	3.70 (1.15)	3.57 (.92)	3.41 (1.21)	3.73 (.93)
Play	4.00 (.96)	4.00 (1.07)	3.88 (1.01)	4.09 (.85)	4.23 (.72)
<b>Parent rating (n=90)<sup>1</sup></b>					
Reading	3.80 (1.10)	3.72 (1.15)	3.50 (.97)	3.40 (1.31)	3.78 (.88)
Play	4.00 (.94)	4.00 (1.06)	3.98 (.87)	4.04 (.90)	4.19 (.73)
<b>Age 5</b>					
<b>Teacher rating</b>					
Task orientation	4.57 (1.85)	4.13 (1.50)	3.94 (1.38)	3.66 (1.34)	3.05 (1.13)
<b>Age 6</b>					
<b>Teacher rating</b>					
Task orientation	5.52 (.81)	3.89 (1.44)	4.44 (1.29)	3.72 (1.38)	2.54 (1.09)
<b>Child's self-rating</b>					
Adult-given tasks	4.00 (.82)	3.82 (1.28)	3.82 (1.47)	3.95 (1.36)	3.96 (1.20)
Reading	4.36 (.69)	3.93 (.73)	3.64 (.91)	3.75 (.98)	3.71 (1.04)
Play	4.43 (.45)	4.23 (.92)	4.21 (.82)	4.21 (.69)	4.51 (.59)
<b>Parent rating (n=90)<sup>1</sup></b>					
Reading	4.40 (.82)	3.89 (.77)	3.69 (.87)	3.76 (1.02)	3.56 (.93)
Play	4.30 (.45)	4.24 (.96)	4.48 (.57)	4.23 (.67)	4.48 (.57)

Note. <sup>1</sup>Parent rating: High: n = 5, Above-average: n = 23, Developers: n = 21, Below-average: n = 25, Low: n = 16.

On closer inspection, the significant univariate and post hoc analyses showed that the low pre-reading group differed from the other groups in task orientation; this difference emerged already at age four (see Table 1). The results indicate that four-year-old children with the lowest level of pre-reading skills also showed the lowest level of task-oriented behavior in adult-guided learning situations in the day-care center.

At age five, the low pre-reading group again differed, but only from the above-average pre-reading group (see Table 1), indicating that children most at risk for reading failure were rated by preschool teachers to be less task-oriented than children with above-average pre-reading skills.

At age six, paired group comparisons show that the low pre-reading group again differed from the other groups. Children who entered the kindergarten year with low pre-reading skills displayed lower levels of task orientation than did their age-mates with higher levels of pre-reading skills. At the same time, children in the high pre-reading group were more task-oriented in learning situations than were the children in all other groups. Interestingly, the developers did not differ from the high pre-reading group in terms of task-oriented behavior.

These person-oriented findings suggest that a low level of pre-reading skills seemed to be developmentally associated with lower task orientation, whereas children with higher levels of pre-reading skills were responding by task-oriented strategies to the demands of adult-guided interaction. These results indicate that pre-reading differences are associated with divergent task-oriented behaviors, especially from age four to age six.

### **Children's interest in different activities in day care**

Next, we examined the differences in the pre-reading skill groups in terms of the children's self-rated interest. A  $5 \times 2$  (pre-reading group  $\times$  time) ANOVA was computed separately for children's self-rated interest in adult-given tasks, reading, and play in day care (Table 1).

No significant main effect was found for time or pre-reading group, nor was there any interaction effect of time and pre-reading group (see Table 1). These results show that the mean levels of children's interest in adult-given tasks, reading, and play were stable from age 4 to age 6. In addition, the results suggest that children's own perceptions of what they would most like to do in day care did not differ as a function of pre-reading skills from age 4 to age 6. However, the descriptive statistics in Table 2 suggest that children in the high prereading group liked and enjoyed much not only reading but also adult-given and play activities at age 6. Whereas the pattern of interest in those three types of

activities was somewhat different among the other prereading groups with the highest mean score for play activities. Accordingly, it can be seen in Figure 1 that children in the low pre-reading group were the most interested in play activities from age four to age six. In addition, children's interest in adult-given tasks was comparable among the pre-reading groups. The children's self-rating in the high pre-reading group had less variation, indicating that their level of interest in adult-given tasks was similar.

### **Parents views on children's interest in reading and play activities at home**

Again, a  $5 \times 2$  (pre-reading group  $\times$  time) ANOVA was computed separately for parent-rated interest in their children's reading and play activities. No significant main nor interaction effect was found for interest in these activities in the pre-reading groups (see Table 1). At age four, the results show that the children's interest in reading and play were similar among pre-reading groups.

At age six, a significant main effect of pre-reading group on child interest in reading activities was found. According to parent-rated interest, a difference emerged between the low pre-reading group and the developers pre-reading group in interest in reading activities at age six (see Table 1). These results indicate a notable decrease of interest in reading in children in the low pre-reading skill group and an increase of interest in reading in children in the developers pre-reading skill group.

With regard to parent-rated interest in play at home, the results indicated that children's level of interest in play was similar at age six. However, the descriptive statistics in Figure 1 and Table 2 show a minor deviation in the average level of six-year-old children's interest in play in favor of the developers pre-reading group.

In sum, children in different pre-reading skills groups showed different levels of task orientation from preschool to kindergarten (from four years to six years). Moreover, it is important to note that the evaluations of the adults, that is, early education teachers and parents, parallel each other for the groups with high and low pre-reading skills. In addition, similarities in children's self-ratings in their interest in academic and play activities were found regardless of their pre-reading group.

## **Discussion**

The present study is one of the few to longitudinally investigate children's pre-reading skill groups using reading precursors and language comprehension skills (e.g., Gough & Tunmer, 1986; Hoover & Gough, 1990) and their differences in task orientation and

interest. Most studies in the field of early childhood education have deployed one or two perspectives to assess children's motivation. In the present study, teachers rated task orientation, children self-rated their interest in adult-given tasks, reading, and play activities in day care, and parents rated reading and play activities at home.

### **Children's pre-reading subgroups and task orientation across ages four to six**

Through the identification of five groups of children with different combinations of pre-reading skills—*high*, *above-average*, *developers*, *below-average*, and *low*—it became possible to delineate similarities and differences in pre-reading skills among the children. Notably, while in most groups children's pre-reading skills remained quite stable across ages four to six, in the developers' group pre-reading skills increased significantly over this time. These findings are in line with studies indicating that individual differences in pre-reading skills emerge early (e.g., Berhenke et al., 2011; Lepola et al., 2016). According to previous research, identification of the level of children's pre-reading skills is crucial because the lower the level of pre-reading skills, the greater the risk of unfavorable learning development (Lepola et al., 2000, 2016; Viljaranta et al., 2017). Further research is needed to explore, for instance, factors associated with the developers' pre-reading skills group.

In addition, the results highlighted clear differences between the five pre-reading skills groups in terms of teacher-rated task orientation. Children with lower levels of pre-reading skills were considered to show less task-oriented behavior in adult-guided learning situations in day care, while children with higher levels of pre-reading skills were rated by their kindergarten and preschool teachers as being more task-oriented.

Few studies have investigated the association between pre-reading skills and task orientation across the ages four, five, and six, but our findings are in line with those of studies that have been conducted. For example, Lepola (2004) studied developmental differences in the task orientation of children with varying levels of pre-reading skills. Children with low pre-reading skills differed from peers with average to high pre-reading skills in terms of their task orientation, as rated by their teachers in the autumn semester of kindergarten to grade 1. The results of the present study, like those of Lepola, pertain to motivation theories and emphasize the importance of children's language resources in their adaptation to a teacher-guided learning environment in kindergarten and preschool. We cannot neglect the pivotal role of early education professionals in supporting each child's task orientation through the provision of optimal learning challenges that motivate the child's exploration and participation (Ryan & Deci, 2000). For example, according to a previous study, the more kindergarteners receive quality feedback from their classroom teachers and are helped to develop their understanding and thinking processes, the less

they tend to avoid task situations (Pakarinen et al., 2011). In addition to this instructional support, when kindergarten teachers set clear rules and provide inherently interesting tasks with high-quality classroom organization, it increases children's task-specific interest as compared to classes with lower-quality classroom organization (Pakarinen et al., 2010). Stipek et al. (1995) found that the more children were given freedom to select their tasks and to perform them without pressure to produce a correct answer, the more challenging were the tasks they chose, the less dependent were they on adults, and the more pride they had in their performance. Previous research has also highlighted that teachers' competence in understanding children's weaknesses and in identifying their strengths can contribute to a favorable learning environment (e.g., Hotulainen & Lappalainen, 2011; Sointu et al., 2017).

Our previous study indicated that a "Bunny Stories" intervention, based on dialogic reading principles and enhancing adult-child verbal interaction, supported the development of task orientation among four-year-old children who initially had low listening comprehension (Laitinen et al., 2013). In addition, the recent findings of Lepola et al. (2022) lend support to the responsiveness of five-year-old children to dialogic reading and align with the present findings by showing that children with high initial story comprehension participated in conversations about the story more than children with average or low story comprehension.

### **Children's interest in different activities in day care and at home**

No statistically significant differences were found between the five pre-reading groups in terms of their self-rated interest in adult-given tasks, reading, and play activities at age four (kindergarten-fall) or at age six (preschool-fall). These results are partly in line with correlational research by Baroody and Diamond (2013), which showed that child-reported literacy interest, based on enjoyment and participation, was not related to parent- or teacher-reported child literacy interest or engagement during free-play and group activities. In addition, Viljaranta et al. (2017) pointed out that differences in children's self-rated interest in reading begin to emerge close to the age of six. There may be reasons to explain the lack of differentiation between the pre-reading groups in terms of the children's self-rated interest. One possible reason relates to the validity and reliability of an assessment in which a researcher poses a question and pairs it with a picture and then asks the child to indicate, by pointing to one of five faces, how much the child likes the task that is illustrated in the picture. Although the pictures support the child's understanding of the different activities, the child's report may be biased by their preference for a particular face among those used to measure their interest (e.g., Davies & Bremner, 1994). In addition, the children may interpret the task as an interview about good or expected behavior and therefore show a tendency to select the happy face (e.g.,

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Stipek et al., 1992). Finally, situational factors, such as what has just happened, for instance, in playing with peers or book sharing, may influence children's self-ratings. Thus, although this measure aimed to reveal individual interest, the child's interaction with the activity, that is, their situational interest, may also have played a role in their responses.

Despite these threats to validity, our results showing that a child's assignment to a particular pre-reading group was not reflected in their level of interest in socially-guided, reading and play activities are important. In other words, even those children that are less skilled in listening comprehension and letter knowledge (i.e., in the *low* and *below-average* groups) enjoyed reading activities in day care at age four and also at age six. Thus, from the perspective of the bioecological model (Bronfenbrenner & Morris, 2006), the resource characteristics (i.e., their literacy skills) did not yet shape the children's demand characteristics, such as their interest in the different activities. It is also important to note that when this study was conducted in Finnish preschools and kindergartens, the children's success in pre-reading skills was not evaluated in relation to curriculum-based standards, and therefore the participating children could be less susceptible to social comparison and its negative impact on self-perceived interest.

It is also conceivable that support for their reading-related activities was received from their early education teacher or from other adults during shared reading, while special education support was available in day care if needed. This kind of support, when well managed and delivered in a warm atmosphere, can facilitate children's enjoyment and liking of these activities (Lerkkanen et al., 2012; Perry et al., 2007). It is also worth noting that the Finnish day care culture emphasizes children's play and creativity, and thus, for example, the early education teacher's sensitive support of children's play can be viewed as a golden opportunity to facilitate the interest of low, average and high achieving children in learning. Furthermore, it is important to identify children's interests because they are at the core of early childhood education (e.g., Finnish National Agency for Education, 2019; Finnish National Board of Education, 2016) and child-centered practice. Therefore, several questions arise regarding how best to determine the interests of young children in the future, whether by asking immediately after a task, by using a picture of the task, as we did in this study, or by observing the children's spontaneous activities. Further research could observe the differences in children's interests associated with spontaneous activity situations.

Parents' ratings highlighted an essential feature, namely, how parents reflect their child's interest in reading and play at home. Parents rated children in the developers' group at age six as more interested in reading than children in the low-skilled pre-reading group. This is in line with the findings of Torppa et al. (2007), showing that vocabulary skills



among three-and-a-half-year-olds were positively associated with the parents' perceptions of their child's interest in reading at five years of age. Parents' ratings are considered to be good estimates, even for second-graders, in the task-avoidant behavior linked to dyslexia (Syal & Torppa, 2019). The experience of reading problems may lead to task avoidance and decreased interest in such activities at home, which becomes apparent to parents.

With regard to interest in play activities, the differences perceived by parents between the developers and the low pre-reading skills group at home were marginally statistically significant. According to previous research, children's interest in play activities can be explained more by their curiosity to explore materials and environments (Martin et al., 2013) than by their readiness to read and by their language competence. While there is evidence concerning the long-term development of language skills and motivation (e.g., Lepola et al., 2016), parallel developmental patterns relating to an interest in play activities may support language development as "symbolic representation" (Vallotton & Ayoub, 2011; Weisberg et al., 2013; Zosh et al., 2014), as well as children's ability to self-regulate their own cognitive and emotional processes (Whitebread et al., 2009). From a practical perspective, interest in activities could be fostered during the early years in day care and at home by providing tasks and activities that prompt successful learning experiences. Experiencing success in early attempts at mastery may mitigate the Matthew effect that might further differentiate between skilled and less skilled pre-readers (Stanovich, 1986).

From an educational point of view, it is crucial to pay attention to the fact that preschool and kindergarten teachers rate high-skilled children as more task-oriented, while their parents rate them as being more interested in reading activities. Correspondingly, children with low pre-reading skills were rated by their teachers as less task-oriented in day care and by their parents as less interested in reading activities at home. Overall, both teachers and parents perceived distinctions between children with different levels of reading and language comprehension skills. This may lead to polarization in how adults interpret their children's activities. Furthermore, children with a high task orientation want to master tasks and seek challenges, leading, in turn, to success and positive affect (see Salonen et al., 1998), as well as to receiving more positive feedback from teachers and parents. All of these factors may increase these children's interest in reading activities.

Although the link between interest and task orientation was not directly examined in this study, the appraisal theory of emotion and behavior assumes that positive emotion, for instance liking, creates a motivational tendency to approach, whereas disliking is linked to avoidance or lower task motivation (Reeve, 2005, p. 339). This link may not be

straightforward because interest as well as task orientation develop through a person's interactions with their environment (i.e., the microsystem). Therefore, the quality of the teacher–child interaction may shape both the child's interest and their task orientation. It is possible that teachers set higher expectations for task-oriented children, offering challenging opportunities that are subsequently reflected in the children's interest in reading-related tasks. Similarly, studies of teacher support (Pianta et al., 2012) and parental support (Aunola et al., 2013) have identified a positive feedback loop for adults' expectations as reflected in first-graders' interests, including their task orientation. In addition, Kajamies et al. (2016) reported that teachers' emotional support was positively associated with preschoolers' engagement in reading activities. Overall, child development is seen as the product of transactions between the child and their social environment (Chow et al., 2018; Northrop, 2017; Sameroff, 2009): they learn to interact with significant others, such as their early childhood education teachers, peers, and parents. The perspectives and behaviors of these significant others may influence a child's motivation and interest in relation to learning situations.

Although young children's self-ratings may be biased by children's tendency to be overoptimistic about their own abilities and their affect regarding the activity (e.g., Harter, 1996), self-ratings do allow children to communicate their level of interest in a particular activity in day care. Furthermore, parents are the most familiar with their children's behavior at home, and over time, parents' ratings of preschool-aged children have been found to correlate with their ratings of the children's literacy interests (Baroody & Dobbs-Oates, 2011). Thus, parents' ratings of their child's interest may increase their understanding of the child's expressions and points of interest, which can be helpful in supporting the emergence, maintenance, and deepening of their interest (see Ainley, 2013; Renninger, 2009). In addition, the teachers' ratings, coming from a more formal learning perspective, play a crucial role in the child's learning and development by assessing the level of a child's motivation in the learning situation.

### **Limitations and future directions**

Although the five identified subgroups are compatible with existing research (e.g., Lepola, 2004; Viljaranta et al., 2017), more evidence is needed concerning the development of early motivation and interest. A second set of limitations of this study is that children's interest and task orientation were measured with either a single-item or with a composite score from two or three items, which raises questions about the measure's reliability and validity. Third, as children with immigrant backgrounds and those with specific difficulties in linguistic skills did not participate, some of the associations that were found may be limited. Consequently, in future studies, diversity in language background and learning difficulties should also be accounted for. In addition, even though differences in

motivation among young children have strongly linked to the development of math skills (Lepola & Hannula-Sormunen, 2018), this was not the aim of this study. An interesting aspect would involve the teachers' and the parents' roles in supporting learning, but this also was not studied. Previous studies have found that the quality of teacher-child interactions affects children's learning motivation and achievement behaviors as early as kindergarten (Pakarinen et al., 2010). The quality of young children's school and home learning environments is thus an important aspect to include in future studies to better understand the socio-constructivist nature of children's learning and development.

In the context of early childhood education, teacher, self, and parent ratings are especially relevant, but most studies of children's motivational behavior have adopted only one or two of these perspectives. Studies of the consistency of these perspectives have suggested that children's motivation is ambiguously manifested (Heckhausen & Heckhausen, 2010; Vauras et al., 2009), and a combination of approaches may help to inform classroom practices and to better support children's literacy practices (for a review, see Conradi et al., 2014). The findings of this study underscore the importance of teachers' awareness of children's motivational development from multiple perspectives, even in preschool, as they all help in the planning and implementation of optimal support for children's learning behaviors (pre-reading skills, task orientation, and interest). In addition, the present study shows that children's motivation and approaches to activities and tasks relate to their pre-reading skills. These results are highly applicable to improving child-centered practices by, for instance, building on children's initiatives, capturing their attention, and encouraging the development of pre-reading skills (see Bouchard et al., 2010). Special care should be taken to organize high-quality support for each child's pre-reading skills, especially for at-risk children (Kajamies et al., 2019). Bunny Stories (Mattinen et al., 2014) and 7-Minutes-to-Stories (Orvasto & Levola, 2010) are examples of long-term learning environments developed to support young children's learning in day-care and home settings.

The findings of this study have further potential to increase early childhood education teachers' collaboration with parents (e.g., Chow et al., 2018; see also Hakyemez-Paul et al., 2021) because teacher ratings in the day-care center, together with parent ratings at home, enable a deeper understanding of the role of educational and social environments in children's individual motivational behavior. While determining the necessary support on the basis of group-level and individual differences (Heckman, 2006; Karoly et al., 2005; Salminen et al., 2012), this study provides a new opening for understanding the associations between the multiple perspectives of different informants and children's learning motivation during preschool and kindergarten.

The present study makes some *future contributions* relating to pre-reading skills and motivation. First, the results suggest that children's pre-reading skills are reflected in adult-rated task orientation and interest in different activities across ages four to six years. Second, children's interest in different activities may encourage them to undertake tasks and solve problems independently (Lehtinen et al., 1995). This kind of child-centered involvement is autonomy-supporting rather than controlling, offering children the experience of meeting challenges on their own and of feeling that they are capable of influencing their surroundings, which may foster children's willingness to take on further tasks and challenges (e.g., Lerkkanen et al., 2012; Stipek et al., 1992; see also "autonomous functioning" in Lepola, 2004). In the long term, these may create a cumulative developmental cycle (see also "task-avoidance behavior" in Salonen et al., 1998) because low interest in reading reduces children's performance in reading-related tasks, which further lowers interest and performance. Moreover, weaknesses in phonological awareness and letter knowledge at the kindergarten level have been shown to predict difficulties in learning to read (Compton et al., 2006; Silvén et al., 2004). According to Lepola (2004), early competence of at least around the average level in pre-reading skills makes a child motivationally less vulnerable during adult-guided learning activities in a day-care setting when adopting gradually growing learning demands. By making educators conscious that children's levels of reading interest can impact performance, teachers' higher expectations and more positive beliefs, such as encouraging performance and choice of activities, can help to increase motivation where children show a low interest in reading-related tasks (Wigfield & Eccles, 2000). Multiple perspectives (i.e., teacher, parent, child) and contexts (i.e., day care and home) are highly relevant from an educational point of view in assessing the need for early interventions (see Baroody & Diamond, 2013; Chow et al., 2018).

## Note

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