Chapter 5
To What Extent Is Reading Motivation a Significant Predictor of Reading Achievement when Controlling for Language and Cognitive Ability? A Systematic Review

Pelusa Orellana García

Abstract Converging evidence has demonstrated that there are cognitive and emotional factors that impact reading ability. While the relationship between reading motivation and reading achievement has been widely documented in the literature, the question of how much variation can be accounted for by reading motivation, when cognitive and linguistic aspects are controlled for, can be more complex and has been examined to a lesser degree. Furthermore, there are fewer studies examining how reading motivation predicts reading achievement among early elementary students. The wide spectrum of factors associated with motivation, and the variety of methods used to assess it make it difficult to compare findings about its impact on reading ability. Studies show that the amount of variation which is attributed to motivation is contingent on several individual, cultural, linguistic, and emotional factors, among which are age, ethnicity, and verbal ability. The extent to which motivation can, in fact, be a strong predictor of reading performance, varies significantly across studies and grade levels.

In the current chapter, we examine recent literature (i.e., from 2000 to the present) describing studies in which motivation has been acknowledged as a significant contributor to reading ability, and discuss their findings, to better understand the variability of such impact. We focus on studies pertaining to elementary students. The analysis of such findings can help clarify the extent to which reading motivation does, in fact, predict reading ability when other cognitive and linguistic factors have been controlled for. This exploration will also help understand the various ways in which motivation can be better utilized to increase reading achievement, particularly among young readers.

Keywords Motivation predictors · Reading achievement · Motivation

P. Orellana García (✉)
School of Education, Universidad de los Andes, Chile
e-mail: porellan@uandes.cl

P. Orellana García, P. Baldwin Lind (eds.), *Reading Achievement and Motivation in Boys and Girls*, Literacy Studies 15,
https://doi.org/10.1007/978-3-319-75948-7_5

5.1 Introduction

The ability to comprehend written text depends on several factors, among which both cognitive and motivational aspects play a significant role (Guthrie et al. 1999; Schaffner and Schiefele 2013). Comprehension is complex, and relies on the articulation of several reading sub processes that occur concurrently (Van Dyke and Shankweiler 2013). Evidence has demonstrated that reading sub processes, as well as other cognitive aspects, can predict reading competence in different ways. Vocabulary, decoding skills, and phonological awareness are among the most widely analyzed sub processes predicting comprehension ability, but there is also evidence about the role of prior knowledge and strategy use, and how they affect our understanding of written text (Stahl and McKenna 2006; Afflerbach 1990; Hirsch 2006; Pearson and Hamm 2005). More recently, studies have attended to the role that executive skills have in determining reading ability. Among these functions, cognitive flexibility has been identified as contributing to significant unique variance to reading comprehension in the different elementary grades, even beyond other cognitive factors (Altemeier et al. 2008).

Overall, evidence seems to point to the notion that a combination of cognitive and linguistic aspects has traditionally explained partial variance in reading comprehension, with lower-level processes such as word recognition, phonological processing and processing speed (among others) predicting from 15% to 70% of comprehension variance (Katzir et al. 2006). As children grow and encounter more complex texts and tasks, comprehension ability relies more strongly on skills such as the use of background knowledge or higher order thinking. More recently, research has also examined the ways in which motivational aspects play a role in the reader's ability to comprehend text. The contribution of motivation has been largely examined considering different theoretical approaches to motivation, among which are, for example, self-determination (Ryan and Deci 2000), and expectancy value. Self-determination theory focuses on intrinsic motivation to read. Intrinsic motivation to read refers to an individual's desire to read out of personal enjoyment and pleasure. This type of motivation has been proven to have a stronger and more decisive impact on academic achievement, and more specifically in reading (Wigfield et al. 2004; Schiefele et al. 2012). Engaged students typically spend more time reading because they find it pleasurable and valuable, and interact with peers who also value reading (McLaughlin 2012). On the other hand, extrinsic motivation refers to external rewards associated with good reading habits, such as grades, social valuation, parental approval, or other material rewards. Evidence has demonstrated the negative impact of extrinsic rewards on comprehension (Yin-Kum 2008; Ryan and Deci 2000), unless combined with intrinsic motivation (Wang and Guthrie 2004).

Recent studies about the role of motivation in reading comprehension have explored how students' expectations for success, together with the value students give to reading tasks, affect their understanding of text (Cartwright et al. 2016). Students who believe they are good readers and value reading are also students who perform better at reading comprehension tasks. This finding has been largely

confirmed for older students, particularly those in the upper elementary and middle grades (Wang and Guthrie 2004; Bozack and Salvaggio 2013), but not as extensively among younger children. These studies are rooted in expectancy-value theory. Among the findings for older students, it has been shown that motivation can predict comprehension among older children, controlling for factors such as initial comprehension levels (Taboada et al. 2009) or cognitive and linguistic factors (Bozack and Salvaggio 2013; Wang and Guthrie 2004).

For students in the lower elementary grades, correlational studies have examined reading motivation and achievement yielding important insights into: (a) the directionality/bi directionality of the relationship (Morgan and Fuchs 2007); (b) the evolution of the relationship across grade levels (Meece and Miller 1999; McKenna et al. 1995); and (c) the magnitude of the correlation (Morgan and Fuchs 2007; Petscher 2010). More recently, analyses have addressed the role of students' expectations for success, together with the value students give to reading tasks, and how these affect their understanding of text (Cartwright et al. 2016). Motivated readers not only believe in their own ability to comprehend texts, but also value and see reading as a pleasurable activity, and show better levels of performance on comprehension tasks. These studies have confirmed that motivation can predict comprehension among younger children, but there is a need to further explore these findings by also looking at the role factors such as initial comprehension levels (Taboada et al. 2009), cognition and language play in the ways in which motivation and comprehension are related (Bozack and Salvaggio 2013; Wang and Guthrie 2004).

Understanding the extent to which motivation predicts achievement under these predicaments can be a much more complex task, as several contextual and linguistic factors must be accounted for. The use of different theoretical stances that may have been adopted to define reading motivation and the use of different tools to assess motivation may make it difficult to compare studies. While these potential difficulties may partially explain the reason why few studies have addressed the predictive nature of reading comprehension, it is important to examine how motivation contributes to reading achievement among children who are just starting to become independent readers, especially if it can be a driver that helps struggling readers persevere in reading activity despite their difficulties (Morgan and Fuchs 2007).

Similarly, the predictive role of reading motivation on comprehension can also be difficult to analyze if studies have examined motivation using self-reporting tools that have not been validated, because young children may interpret questions differently (Nolen 2007). On the other hand, self-reported questionnaires that are built around clearly defined motivational constructs facilitate the understanding of the contributions that can be attributed to motivation as a predictor of reading achievement. For example, studies like the ones analyzed by Morgan and Fuchs in 2007 (e.g., Chapman and Tunmer 1995; Lepola et al. 2000; Gottfried 1990) used tools where constructs such as competency beliefs and goal orientations were clearly delineated and could be empirically determined. Such tools have the potential to determine how specific motivation constructs may be linked to comprehension enhancement. When comparing findings from various predictive studies, it is also important to analyze results by creating categories that include findings that are

comparable among them. For example, studies in which controlled variables included verbal ability, verbal knowledge, vocabulary, or language, have estimated the percentage of variance explained by reading motivation to be as low as 6% and as high as 65% (see, for example, Stutz et al. 2016; and Wang and Guthrie 2004).

5.2 Method

To examine the findings from studies predicting reading outcomes from reading motivation, we searched for published studies dated from the year 2000 onwards. Rather than conducting a meta-analysis, we chose the systematic review approach. Researchers who have analyzed the predictive value of reading motivation on comprehension have used a wide array of theoretical approaches, data collection tools, and outcome variables in their studies. The variety in these procedures would make it very difficult to compare findings from a meta-analytical perspective. Pooling effect estimates from individual studies that have not defined reading motivation in the same way may lead to confusion about how much variation in motivation affects comprehension. A systematic review, on the other hand, allows for more heterogeneity because they require a search in the entire body of the literature, yet at the same time it maintains rigorous control over selection for inclusion and exclusion and replicability (Pawson et al. 2005).

To address our question of how much variation can be accounted for by motivation, when cognitive and linguistic aspects are controlled, we conducted a wide search of published studies using the EBSCO, Psychology and Behavioral Sciences Collection, JSTOR, and ERIC databases as our search engines. The search parameters included: (1) studies published after 2000; (2) published in an indexed, peer-reviewed journal; and (3) use of rigorous research methods reporting percentage of variance explained by motivation components. Similar criteria have been used in other reviews of prediction studies such as in Linder et al. (2013), and La Paro and Pianta (2000). We also used the reference sections of some selected publications to identify additional sources that would meet the three criteria. Abstracts were examined in more detail and used to group the studies according to motivation components used as predictors and reading components used as outcome variables. A total of 840 publications emerged from the first search. A second round of reviews was made to ensure that criterion 3 (reporting percentage of variance explained) was met. A considerable number of studies had to be excluded because they did not focus mainly on elementary grade readers. This inclusion criteria was determined precisely because of the lack of studies examining the predictability of motivation over comprehension within that specific school-grade level (Stutz et al. 2016; McElvany et al. 2008). Similarly, a considerable number of publications addressed the correlation between motivation and reading achievement, (see, for example, Schiefele et al. 2012; Schaffner et al. 2013; De Naeghel and Van Keer 2013) but did not conduct regressions to examine the extent to which motivation would contribute to reading comprehension performance.

We found 15 articles published in renowned peer-reviewed reading journals that fulfilled the above-listed criteria. This amount is quite small, considering the much larger quantity of studies where predictive analyses of motivation and reading comprehension were conducted for older students, particularly in middle school. Table 5.1 lists the studies that were eligible and the features examined.

Among the selected publications, some examined the predictive value of motivation on comprehension for more and less-competent readers. Others (e.g., Wang and Guthrie 2004), compared the predictive power of extrinsic versus intrinsic motivation while at the same time examining these variables from a cross-cultural perspective (e.g., U.S. versus Chinese students). Only one study was found which examined the extent to which reading motivation predicted comprehension among students for whom English was a second or foreign language, although several published articles explore this aspect among high-school and college readers.

Once studies were selected we classified them based on whether results explained controlling for cognitive, linguistic factors and/or other factors, although we must admit that there is considerable overlap of these measures in the majority of the studies analyzed. However, we report them separately, and we categorized them in either group based on the most salient features the researchers had controlled for. Linguistic factors included specific reading subprocesses, such as decoding, prior reading ability, verbal processing or verbal ability in general, whereas cognitive factors included executive functions, comprehension strategy use or working memory. Although executive functions and working memory are required to adequately decode words and retrieve information when reading, they are also considered cognitive because they allow readers cognitive flexibility to adjust their reading strategies and purposes for the sake of comprehension.

In the next two sections, we discuss these findings with particular emphasis on the amount of variance explained by motivation in each case. Prior to that, we comment on some general themes that emerged from our analysis of the selected articles.

5.3 Results

5.3.1 General Aspects

Our search for articles that examined the predictive role of reading motivation on reading comprehension ratified what previous authors had observed regarding the lack of studies focusing on early elementary students (e.g., Cartwright et al. 2016; Wang and Guthrie 2004). We agree with authors who emphasize the need to comprehend the unique ways in which motivation supports comprehension as early as possible, particularly for students who, as early as second grade, begin to exhibit poor reading ability. Understanding the ways in which motivation contributes to a student's reading ability in a timely manner can allow teachers to provide the

Table 5.1 Motivation predictors of reading comprehension controlling for cognitive and linguistic aspects

Reference/Study	Approach to Reading Motivation	Amount of Variance explained	Cognitive and Linguistic Aspects Controlled
1. Martínez, R. S., Aricak, O. T., & Jewell, J. (2008). Influence of reading attitude on reading achievement: A test of the temporal-interaction model. *Psychology In The Schools, 45*(10), 1010–1023.	Implicit models of reading (Schraw and Bruning 1999; Unrau and Schlackman 2006).	22%	Cognitive ability, prior reading achievement.
2. Park, Y. (2011). How motivational constructs interact to predict elementary students' reading performance: Examples from attitudes and self-concept in reading. *Learning and Individual Differences, 21*, 347–358.	Expectancy-value (intrinsic vs. extrinsic motivation).	17%	Gender, SES, amount of reading outside school, class mean SES and within class proportion of students with reading difficulties.
3. Liebfreund, M. D., & Conradi, K. (2016). Component skills affecting elementary students' informational text comprehension. *Reading & Writing, 29*, 1141–1160.	Construction-integration model (Kintsch 1988, 1998, 2004) and interactive compensatory model (Stanovich 1980).	62.5%	Cognitive ability.
4. Guthrie, J. T., Hoa, L. W., Wigfield, A., Tonks, S. M., Humenick, N. M., & Littles, E. (2007). Reading motivation and reading comprehension growth in the later elementary years. *Contemporary Educational Psychology, 32*, 282–313.	Engagement model (Guthrie and Wigfield 2000).	12% (interest as motivation), 22% (choice as motivation), 12% (involvement as motivation), and 9% (overall motivation).	Pre-test reading comprehension.
5. Stutz, F., Schaffner, E., & Schiefele, U. (2016). Relations among reading motivation, reading amount, and reading comprehension in the early elementary grades. *Learning and Individual Differences, 45*, 101–113.	Expectancy-value (intrinsic vs. extrinsic reading motivation).	6%	Cognitive ability and socioeconomic status.

(continued)

Table 5.1 (continued)

Reference/Study	Approach to Reading Motivation	Amount of Variance explained	Cognitive and Linguistic Aspects Controlled
6. Schaffner, E., Philipp, M., & Schiefele, U. (2014). Reciprocal effects between intrinsic reading motivation and reading competence? A cross-lagged panel model for academic track and non-academic track students. *Journal of Research in Reading*, 1–18.	Expectancy-value (intrinsic vs. extrinsic motivation).	N/A (factor analysis)	Cognitive ability.
7. Guthrie, J. T., Wigfield, A., Humenick, N. M., Perencevich, K. C., Taboada, A., & Barbosa, P. (2006). Influences of stimulating tasks on reading motivation and comprehension. *Journal of Educational Research*, *99*(4), 232–245.	Engagement perspective.	Number of stimulating tasks in reading comprehension accounted for 22% of variance in motivation.	Controlling for beginning of year reading comprehension. Motivation has a mediating effect.
8. Logan, S., Medford, E. & Hughes, N. (2011). The importance of intrinsic motivation for high and low ability readers' reading comprehension performance. *Learning and Individual Differences, 21*, 124–128.	Expectancy-value (intrinsic vs. extrinsic motivation) in proficient vs struggling readers.	21% among low-ability readers.	Cognitive and verbal ability.
9. Howse, R. B., Lange, G., Farran, D. C., & Boyles, C. D. (2003). Motivation and self-regulation as predictors of achievement in economically disadvantaged young children. *The Journal of Experimental Education, 71*(2), 111–174.	Motivation and self-regulation.	36% together with vocabulary knowledge and self-regulation, 5% motivation alone.	Age, cognitive ability, and ethnicity.
10. Wang, J. H.-Y. & Guthrie, J. T. (2004). Modeling the effects of intrinsic motivation, extrinsic motivation, amount of reading, and past reading achievement on text comprehension between U.S. and Chinese students. *Reading Research Quarterly*, *39*, 162–186.	Expectancy-value (cross-cultural, compared U.S. and Chinese students).	64% for U.S. students, and 73% for Chinese students.	Past reading achievement, reading amount, and extrinsic motivation.

(continued)

Table 5.1 (continued)

Reference/Study	Approach to Reading Motivation	Amount of Variance explained	Cognitive and Linguistic Aspects Controlled
11. Cartwright, K. B., Marshall, T. R., & Wray, E. (2016). A Longitudinal study of the role of Reading motivation in primary Students' reading comprehension: Implications for a less simple view of reading. *Reading Psychology*, *37*(1), 55–91.	Expectancy-value.	19.9% in longitudinal studies.	Verbal ability, initial reading comprehension, some executive functions.
12. Lepola, J., Niemi, P., Kuikka, M., & Hannula, M. (2005). Cognitive-linguistic skills and motivation as longitudinal predictors of reading and arithmetic achievement: A follow-up study from Kindergarten to Grade 2. *International Journal of Educational Research*, *43*, 250–271.	Motivational orientations: Task orientation and social dependence.	6–11%	Linguistic skills.
13. Taboada, A., Tonks, S., Wigfield, A., & Guthrie, J. (2009). Effects of motivational and cognitive variables on reading comprehension. *Reading and Writing: An Interdisciplinary Journal*, *22*, 85–106.	Internal dimensions.	11.8%	Cognitive ability.
14. Katzir, T., Lesaux, N. & Kim, Y. S. (2009). The role of reading' self-concept and home literacy practices in fourth-grade reading comprehension. *Reading and Writing*, *22*, 261–276.	Self-perception and attitudes towards reading.	17%reading difficulty 14%, reading competence6%, and attitude towards reading 8%	Age, verbal ability, and word reading skills.
15. Solheim, O. J. (2011). The impact of reading self-efficacy and task value on reading comprehension scores in diferent item formats. *Reading Psychology, 32*(1), 1–27.	Expectancy-value.	20% for multiple choice items, 26% for constructed (essay-type) response.	Word reading ability, listening comprehension and non-verbal ability.

necessary scaffolding and instructional support that will allow that student to become an autonomous reader. Motivation refers to individual drives about expectations of success on reading tasks, but also leads to valuing reading activities, which in turn make it likely for students to spend more time engaged in literacy. A considerable amount of evidence supports the notion that intrinsic motivation is strongly linked to reading amount (Wang and Guthrie 2004), and that reading amount facilitates or at least mediates the acquisition of higher levels of comprehension (Guthrie et al. 1999).

Another aspect emerging from our search reveals the small repertoire of studies focusing on the predictive role of motivation on comprehension for second language learners. Only one article was found to address this group of readers in the elementary grades (Netten et al. 2011). Globalization has brought forth a huge increase in the number of children who, for various reasons, have to deal with comprehension in a second or foreign language, often with considerable disadvantages due to lack of language knowledge. Just as reading sub-processes do transfer from L1 to L2, it is possible that students who like to read in their home language be also motivated to read in a second language, particularly when literature in L2 offers a wider array of topics, genres, or formats. Just as research on comprehension in first language acknowledges the role of motivation in a person's ability to comprehend text (McLaughlin 2012), considering the extent to which motivation to read in the first language may transfer to reading in a second language can be informative of the ways in which these constructs interact regardless of text language.

Finally, our revision of articles examining the predictive role of reading motivation and its unique contribution to reading achievement revealed that the majority of studies exhibited a combination of cognitive and linguistic factors as variables controlled for. Only 3 of the selected studies report variance explained by comprehension when purely cognitive variables are controlled (e.g., Liebfreund and Conradi 2016; Martínez et al. 2008; Guthrie et al. 2007). In most of the studies, however, authors not only report a combination of cognitive and linguistic variables, but also include demographic aspects such as gender, socioeconomic status, amount of reading, reading difficulty, ethnicity and listening comprehension. In the majority of the studies the unique variance explained by motivation is reported along with the percentage attributed to the other factors analyzed.

5.3.2 Predictive Role of Motivation when Cognitive Factors Are Controlled

Traditionally, motivation to read has been strongly correlated with reading ability, with better comprehenders generally exhibiting higher levels of intrinsic reading motivation than those who have difficulty comprehending texts (Baker and Wigfield 1999; Chapman and Tunmer 1995; Gottfried 1990). Students who struggle with comprehension are easily frustrated when confronted with texts that pose high

demands on cognitive skills, particularly verbal processing, but also executive functions such as working memory. Most struggling readers use a considerable amount of their working memory and other cognitive tools to process text at the decoding level, thus deploying valuable cognitive resources before they can focus on comprehension. On the other hand, retrieving information, making connections, cross-checking and monitoring are all strategies proficient readers use with relative ease. These students do not need to use a huge amount of cognitive resources to decode because they have already "cracked the code", so most of their decoding is effortless. Because the use of these skills yields positive results in reading competence, their motivation to read is boosted. Low-performing students, on the other hand, may be easily frustrated and give up when comprehension demands become overwhelming. Frustration causes loss of interest in reading. Thus, the cause-effect relationship between reading failure and non-motivated readers can often be observed among low-performing readers, and it is usually a vicious circle that is difficult to break. Logan et al. (2011) observed that intrinsic motivation explained up to 21% of the variance in comprehension for low-ability students along with decoding, whereas for competent readers, most of the variance is explained by verbal ability. Motivation can be especially important for students identified with reading difficulties, particularly at the early elementary level, because it provides the emotional energy that allows them to be persistent in the task and not give up when facing difficulties. In line with Morgan and Fuchs (2007) and Law and Chan (2003), Logan et al. (2011) emphasize the importance of enhancing readers' intrinsic motivation early in their school lives so that they do not become frustrated when confronted with difficult reading tasks. Another study by Schaffner et al. (2014), however, found a stronger impact of intrinsic motivation ($R^2 = 0.63$) over reading ability for students in an academic track —and therefore better-performing students— than for those in non-academic tracks in German schools. The authors identify a reciprocal relationship between the two constructs that is strongly dependent on school track affiliation, controlling for prior reading ability.

Howse et al. (2003) analyzed the role of motivation as a predictor of reading ability among Kindergarten at-risk (e.g. economically disadvantaged) and no-risk (middle SES) students. Using stepwise regressions, they were able to determine that motivation was a significant predictor of reading achievement that, along with self-regulation and vocabulary, could explain up to 36% of the variance in reading scores. However, motivation alone only explained 5% of the variance. The findings also showed that motivation contributed in similar ways for children at risk as well as for children who are not at risk.

The ability to comprehend different text types may also be mediated by motivation in different ways. Liebfreund and Conradi (2016) examined the unique contributions of motivation to students' comprehension of informational text beyond grade and age. Together with decoding, vocabulary and prior knowledge, intrinsic motivation to read explained 63% of total variance. More specifically, intrinsic motivation could explain additional variance in a smaller amount, but when looking at the way in which each factor impacted comprehension, intrinsic motivation and vocabulary were consistent predictors of informational text comprehension for low-

ability readers, a finding that is in line with what was observed by Logan et al. (2011). In line with Schiefele (1999), the authors suggest that the ways in which motivation influences and predicts comprehension ability differs across different types of readers. Furthermore, intrinsic motivation was a significant predictor of reading growth over time, mainly for low-performing readers, a finding that was also identified by Logan et al. (2011). In a secondary analysis of PIRLS data for U.S. students, Park (2011) analyzed reading attitude and self-concept in relation to reading ability for over 5000 students. Multilevel analysis showed that the extent to which reading motivation can predict reading ability among fourth graders is strongly dependent on a combination of motivational facets. For example, the ways in which peers perceived a reader's competence was a better predictor of reading ability if the reader also had a high self-perception of his or her ability to comprehend text. All in all, however, Park was able to establish that motivation could explain 17% of the variance in reading comprehension controlling for SES, amount of reading, and percentage of students with reading difficulties. Similarly, Guthrie et al. (2007) found motivation to be a significant predictor of end-of-year comprehension, with reading interest explaining 12% of its variance and book choice explaining 22% of variance in reading growth, controlling for prior reading skills. The fact that variance explanation changes depending on which motivational aspect is taken into account is yet another proof of how complex the contribution of reading motivation can be. As a multidimensional concept, the role of motivation as a predictor of reading ability can vary, with different facets having varying levels of predictive power, depending on which domain is observed. Both studies also stress the importance of targeting intrinsic motivation after confirming that self-related facets of motivation are more strongly and positively related to reading ability.

Taboada et al. (2009) also found that motivation, background knowledge and cognitive strategy use made significant independent contributions to fourth-grade children's reading ability when other variables were controlled. Similarly, Cartwright et al. (2016) found a significant contribution of reading motivation to comprehension, both concurrently and longitudinally beyond decoding, verbal ability and executive function. These two studies confirm the notion that motivation can predict reading comprehension growth over time, even for young readers. Along similar lines, the research conducted by Martínez et al. (2008) suggests that reading motivation in the early grades can have a temporal interaction upon later reading achievement that must not be overlooked. They looked at fourth-grade students reading attitudes using the ERAS (McKenna and Kear 1990) and correlated these scores with fourth-grade reading achievement measures but found relatively low levels of correlation. Four months later, they assessed reading ability in fifth grade. Results showed that motivation to read in fourth grade predicted reading achievement in fifth grade and could account for 22% of the variance in fifth-grade reading achievement. These findings were in line with what Kush et al. (2005) had observed when analyzing reading achievement and motivation of second- and third- graders which did not correlate, but, when regressing seventh-grade scores for the same students, observed that both second-grade measures showed causal paths to seventh-grade reading. These results point to the fact that early reading motivation does impact

future reading performance, thus supporting the need for better understanding of motivational patterns when children are in the early stages of reading.

5.3.3 Predictive Value of Reading Motivation when Linguistic Factors Are Controlled

A small number of the studies we selected found that motivation predicted comprehension over and above linguistic factors. Language skills have been found to be strongly related to children's ability to comprehend texts (Cain et al. 2004) particularly when children are learning to read. For example, aspects such as word decoding and listening comprehension (Verhoeven and van Leeuwe 2008) have been identified as strong predictors of reading comprehension for elementary students; however, some linguistic factors are also strongly tied to reading sub processes and cognitive skills. For example, the ability to know and understand the meaning of an unfamiliar way may depend on a reader's language knowledge, such as the use of morphemic (Carlisle 2000) or syntactic analysis (Mokhtari and Thompson 2006) to determine a word's meaning, but it may also relate to cognitive tasks such as association to background knowledge or the use of contextual information (Fenson et al. 1994; Van der Schuit et al. 2011). It is therefore not surprising that in most cases the studies that examined motivation as a predictor of comprehension controlled for both cognitive and linguistic factors at the same time. In fact, three of the studies we identified exhibit a combination of these two aspects: Katzir et al. (2009), Cartwright et al. (2016), and Logan et al. (2011), whereas only one of them (Lepola et al. 2005) focused on motivation and comprehension in relation to verbal skills.

Logan and colleagues found that verbal IQ explained significant variance among successful readers, whereas for poorer readers, variance in comprehension was explained by decoding skills, not intrinsic motivation. When they looked at the role of intrinsic motivation on reading growth, the low ability group seemed to benefit more than the more competent group. This can be explained by the fact that more proficient readers have already acquired an adequate proficiency level on those verbal skills required to better understand a text. Less proficient readers, by contrast, must rely on a series of low-level verbal skills associated with decoding or word recognition. This finding is interesting, because previous studies had mainly emphasized the impact of intrinsic motivation on competent readers, and boosting intrinsic motivation on low-ability may significantly contribute to their improvement across the years. The pedagogical implications tap into the notion that there are many things teachers can do that develop intrinsic reading motivation among struggling readers, particularly when it comes to matching reader ability to text level, or to allowing choice in terms of genre, topic, or reading format.

Along the same lines, a follow-up study conducted by Lepola et al. (2005) examined the extent to which motivational orientations (specifically task orientation and social dependence) in Kindergarten Finnish students predicted their reading and

mathematical skills in Grades 1 and 2. They showed that these motivational traits could explain between 6 and 11% of variance in second grade comprehension, contributing in different ways, over and above prior abilities. For beginning readers, a higher level of task focus made a stronger impact, whereas children with lower level reading ability showed higher levels of social dependence. Furthermore, children who exhibited lower levels of performance in mathematics and reading exhibited downward motivation trajectories that were strongly associated to their achievement in both areas. Lepola et al. (2005) identified task orientation (a sub-construct within intrinsic motivation) to have a unique contribution to reading achievement when controlling for linguistic skills, and that this contribution was higher among students in second grade than in the lower grades. Among kindergartners, task orientation contributed to decoding, but not to comprehension, a finding that is in line with Schiefele et al. (2012) who report that higher levels of intrinsic motivation (particularly involvement) significantly correlated with comprehension among younger students (second and third grade). Findings from the studies we have described highlight the powerful role of motivation in beginning reading instruction, and point to the need to strengthen this predictor as soon as children begin reading instruction. As Lepola et al. (2005) show, children who are strongly dependent on others to carry out their tasks exhibit lower levels of motivation as they move up the grade levels, along with lower levels of performance. This may be explained by a loss in the "sense of control" that takes place early in their schooling, especially when children who struggle with reading see themselves as falling behind those who exhibit better levels of performance. These students require ongoing support from others (social dependence), which, as their studies suggest, negatively impact their reading autonomy over the years (Greenfield Spira et al. 2005; Niemi et al. 1999).

Finally, a study by Katzir et al. (2009) indicated that readers' self-concept was positively associated with reading ability, specifically the student's sense of ease with reading. They accounted for age, word reading and verbal ability. Results showed that children who believed reading was easy had higher comprehension scores. Of the three self-concept components, they assessed, sense of ease explained the highest percent of variance (14%). In line with the work of Gottfried (1990), Guthrie et al. (1999), and others, the authors support the fact that reading depends on both cognitive and motivational factors beyond linguistic ability, and point to children's perception of their own reading ability as an important contributor to reading performance.

5.3.4 Other Factors Reported

Many of the studies we analyzed also explored other factors that either mediated or affected reading performance and motivation. Among the most frequently reported factors is amount of reading, which has been found to be a mediator of the effect of intrinsic motivation on comprehension (see, for example, Schaffner et al. 2013;

Guthrie et al. 1999). Solheim (2011), for example, examined the impact of intrinsic motivation on reading comprehension with different test formats used to assess comprehension. Using expectancy-value as a framework for motivation, she established that motivation to read accounts for additional variance in comprehension (20 to 26%) controlling for word reading ability, listening comprehension and other cognitive abilities. Reading self-efficacy predicted Norwegian students' reading performance on multiple-choice test formats for children who had lower levels of self-efficacy, whereas for students who exhibited higher self-perceptions of their reading ability, self-efficacy did not predict comprehension scores. These results emphasize the notion that self-efficacy is an important feature affecting the development of reading comprehension. Students who show higher levels of self-efficacy feel motivated when confronted with more challenging reading tasks such as more elaborated response, whereas students with lower levels of self-efficacy may feel more comfortable and better trained to respond to multiple-choice questions. As Solheim states, "the level of self-efficacy affects how much students understand of the texts they read about but probably also the degree to which they are able to demonstrate what they have actually understood" (p. 22). From a pedagogical standpoint, then, it would be important to ensure that students who perceive themselves as low efficacious be given plenty of opportunities to demonstrate their understanding of text in formats such as constructed response or short answer questions. In times of high-stakes standardized assessment, this restates the need to look for more in-depth ways to identify students' reading ability than a traditional multiple-choice format.

5.4 Conclusion

The current chapter has addressed the extent to which reading motivation predicts reading comprehension controlling for cognitive and linguistic factors. We decided to focus on the elementary grades because there is a lack of studies reporting predictability in these grade levels (Schiefele et al. 2016; Hamilton et al. 2013; Law 2008). Our search for studies reporting variance explained, and controlling for cognitive and linguistic factors proved that only a handful of studies have addressed this topic in the early elementary grades, and few of them explain how they controlled for such factors in an isolated manner. In terms of methods, the most widely used are multiple regressions, hierarchical regressions and structural equation modeling. All studies confirm that it is intrinsic, and not extrinsic motivation, which is most closely related with reading competence, a finding that has been consistent in the literature.

On the other hand, our findings show that the percentage of variance explained by intrinsic motivation varies significantly: it can be as low as 6% or as high as 64%. The wide range in variance can be explained as a function of the amount of factors controlled for and the extent to which these are disaggregated. The variance explained also differs as a function of some individual aspects such as reading abil-

ity (e.g. Logan et al. 2011), socioeconomic status (Katzir et al. 2009) and age (Howse et al. 2003), or a combination of all these aspects and their relationship to self-efficacy. For example, for older readers performing at grade level, the correlation between reading ability and self-efficacy (an intrinsic motivation construct) is stronger than for younger students or for students with some degree of reading difficulty (Chapman and Tunmer 1995; Lepola et al. 2000; Chapman et al. 2000).

Similarly, the difference in the amount of variance explained by intrinsic motivation in the studies we examined can also be attributed to the type of reading it refers to. As De Naeghel et al. (2012) point out, the independent contribution of intrinsic motivation, and particularly reading self-concept to reading achievement, is higher when it pertains recreational reading than when it impacts academic reading. Students who read in their leisure time are more motivated than those who do not. Likewise, they tend to read self-chosen texts, which, in turn, boost their interest in reading. Although some of this intrinsic motivation is likely to transfer to more academic reading instances, the amount of variance explained by intrinsic motivation may also be a function of the reading situation a student is involved in.

Together, all the articles stress the importance of developing positive reading self-concepts among students as early as possible. Notably, self-efficacy is one of the strongest predictors of comprehension ability (Chapman and Tunmer 1995; Lepola et al. 2000). In fourth grade students, self-efficacy is positively related to reading comprehension (Katzir et al. 2009; Shell et al. 1995), even after controlling for verbal ability and word reading skills. Building high levels of self-efficacy is particularly important for those students with learning disabilities; since their reading motivation decreases earlier, and negatively impacts reading comprehension (Chapman et al. 2000; Tabassam and Grainger 2002). As one examines the findings presented by the articles included in this revision, it becomes even more evident that research on the predictive role of reading motivation in the early grades can positively impact the development of practices to foster self-efficacy and other motivational constructs before comprehension is affected.

References

Afflerbach, P. (1990). The influence of prior knowledge and text genre on readers' predictive strategies. *Journal of Reading Behavior, 22*(2), 131–148.

Altemeier, L. E., Abbott, R. D., & Berninger, V. W. (2008). Executive functions for reading and writing in typical literacy development and dyslexia. *Journal of Clinical and Experimental Neuropsychology, 30*, 588–606.

Baker, L., & Wigfield, A. (1999). Dimensions of children's motivation for reading and their relations to reading activity and reading achievement. *Reading Research Quarterly, 34*(4), 452–477.

Bozack, A. R., & Salvaggio, A. N. (2013). Relational effects of reading motivation and academic achievement among adolescent boys. *Reading Psychology, 34*, 507–522.

Cain, K., Oakhill, J., & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology, 96*(1), 31–42.

Carlisle, J. F. (2000). Awareness of the structure of meaning of morphologically complex words: Impact on reading. *Reading and Writing: An Interdisciplinary Journal, 12*, 169–190.

Cartwright, K. B., Marshall, T. R., & Wray, E. (2016). A longitudinal study of the role of reading motivation in primary students' reading comprehension: Implications for a less simple view of reading. *Reading Psychology, 37*(1), 55–91.

Chapman, J. W., & Tunmer, W. E. (1995). Development of young children's reading self-concepts: An examination of emerging subcomponents and their relationship with reading achievement. *Journal of Educational Psychology, 87*, 154–167.

Chapman, J. W., Tunmer, W. E., & Prochnow, J. E. (2000). Early reading-related skills and performance, reading self-concept, and the development of academic self-concept: A longitudinal study. *Journal of Educational Psychology, 92*, 703–708.

De Naeghel, J., Van Keer, H., Vansteenkiste, M., & Rosseel, Y. (2012). The relation between elementary students' recreational and academic reading motivation, reading frequency, engagement, and comprehension: A selfdetermination theory perspective. *Journal of Educational Psychology, 104*, 1006–1021. https://doi.org/10.1037/a0027800.

De Naeghel, J., & Van Keer, H. (2013). The relation of student and class-level characteristics to primary school students' autonomous reading motivation: A multilevel approach. *Journal of Research in Reading*, *36*, 351–370. doi: 0.1111/j.1467-9817.2013.12000.x

Fenson, L., Dale, P. S., Reznick, J. S., Bates, E., Thal, D., & Pethick, S. J. (1994). Variability in early communicative development. *Monographs of the Society for Research in Child Development, 59*(5), 1–185.

Gottfried, A. E. (1990). Academic intrinsic motivation in young elementary school children. *Journal of Educational Psychology, 82*, 525–538.

Greenfield Spira, E., Storch Bracken, S., & Fischel, J. E. (2005). Predicting improvement after first-grade reading difficulties: The effects of oral language, emergent literacy, and behavior skills. *Developmental Psychology, 41*, 225–234.

Guthrie, J. T., Hoa, L. W., Wigfield, A., Tonks, S. M., & Perencevich, K. C. (2006). From spark to fire: Can situational reading interest lead to long-term reading motivation? *Reading Research and Instruction, 45*, 91–117.

Guthrie, J. T., Wigfield, A., Metsala, J. L., & Cox, K. E. (1999). Motivational and cognitive predictors of text comprehension and reading amount. *Scientific Studies of Reading, 3*, 231–256.

Guthrie, J. T., Hoa, L. W., Wigfield, A., Tonks, S. M., Humenick, N. M., & Littles, E. (2007). Reading motivation and reading comprehension growth in the later elementary years. *Contemporary Educational Psychology, 32*, 282–313.

Hamilton, E. W., Nolen, S. B., & Abbott, R. D. (2013). Developing measures of motivational orientation to read and write: A longitudinal study. *Learning and Individual Differences, 28*, 151–166. https://doi.org/10.1016/j.lindif.2013.04.007.

Hirsch, E. (2006). Building knowledge: The case for bringing content into the language arts block and for a knowledge-rich curriculum core for all children. *American Educator, 30*(1), 8–29.

Howse, R. B., Lange, G., Farran, D. C., & Boyles, C. D. (2003). Motivation and self-regulation as predictors of achievement in economically disadvantaged young children. *The Journal of Experimental Education, 71*(2), 111–174.

Katzir, T., Kim, Y.-K., Wolf, M., O'Brien, B., Kennedy, B., Lovett, M., & Morris, R. (2006). Reading fluency: The whole is more than the parts. *Annals of Dyslexia, 56*, 51–82.

Katzir, T., Leseaux, N., & Kim, Y. S. (2009). Reading self-concept and reading comprehension for middle grade elementary school children. *Reading and Writing: An Interdisciplinary Journal, 22*, 261–276.

Kush, J. C., Watkins, M. W., & Brookhart, S. M. (2005). The temporal-interactive influence of reading achievement and reading attitude. *Educational Research and Evaluation, 11*, 29–44.

La Paro, K. M., & Pianta, R. C. (2000). Predicting children's competence in the early school years: A meta-analytic review. *Review of Educational Research, 70*, 443–484.

Law, Y.-K. (2008). The relationship between extrinsic motivation, home literacy, classroom instructional practices and reading proficiency in second-grade Chinese children. *Research in Education, 80*, 37–51.

Law, K., & Chan, D. (2003). Reading strategy use and motivation among Chinese good and poor readers in Hong Kong. *Journal of Research in Reading, 26*, 177–190.

Lepola, J., Vauras, M., & Mäki, H. (2000). Gender differences in the development of academic self-concept of attainment from 2nd to 6th grade: Relations with achievement and perceived motivational orientation. *Journal of the Hellenic Psychological Society, 7*, 290–308.

Lepola, J., Niemi, P., Kuikka, M., & Hannula, M. (2005). Cognitive-linguistic skills and motivation as longitudinal predictors of reading and arithmetic achievement: A follow-up study from Kindergarten to Grade 2. *International Journal of Educational Research, 43*, 250–271.

Liebfreund, M. D., & Conradi, K. (2016). Component skills affecting elementary students' informational text comprehension. *Reading & Writing, 29*, 1141–1160.

Linder, S., Ramey, M. D., & Zambak, S. (2013). Predictors of school readiness in literacy and mathematics: A selective review of the literature. *Early Childhood Research and Practice, 15*(1.) Retrieved from http://ecrp.uiuc.edu/v15n1/linder.html.

Logan, S., Medford, E., & Hughes, N. (2011). The importance of intrinsic motivation for high and low ability readers' reading comprehension performance. *Learning and Individual Differences, 21*, 124–128.

Martínez, R. S., Aricak, O. T., & Jewell, J. (2008). Influence of reading attitude on reading achievement: A test of the temporal-interaction model. *Psychology in the Schools, 45*(10), 1010–1023.

McElvany, N., Kortenbruck, M., & Becker, M. (2008). Lesekompetenz und Lesemotivation: Entwicklung und Mediation des Zusammenhangs durch Leseverhalten [reading competence and reading motivation: Their development and the mediation of the relationship by reading behavior]. *Zeitschrift für Pädagogische Psychologie, 22*, 207–219. https://doi.org/10.1024/1010-0652.22.34.207.

McKenna, M. C., & Kear, D. J. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher, 43*(8), 626–639. https://doi.org/10.1598/RT.43.8.3.

McKenna, M. C., Kear, D. J., & Ellsworth, R. A. (1995). Children's attitudes toward reading: A national survey. *Reading Research Quarterly, 30*(1), 934–956.

McLaughlin, M. (2012). Reading comprehension: What every teacher needs to know. *The Reading Teacher, 65*(7), 432–440.

Meece, J. L., & Miller, S. D. (1999). Changes in elementary school children's achievement goals for reading and writing: Results of a longitudinal and an intervention study. *Scientific Studies of Reading, 3*, 207–229.

Mokhtari, K., & Thompson, H. B. (2006). How problems of reading fluency and comprehension are related to difficulties in syntactic awareness among fifth graders. *Reading Research and Instruction, 46*, 73–94.

Morgan, P. L., & Fuchs, D. (2007). Is there a bidirectional relationship between children's reading skills and reading motivation? *Exceptional Children, 73*, 165–183.

Netten, A., Droop, M., & Verhoeven, L. (2011). Predictors of reading literacy for first and second language learners. *Reading and Writing: An Interdisciplinary Journal, 24*(4), 413–425.

Niemi, P., Kinnunen, R., Poskiparta, E., & Vauras, M. (1999). Do pre-school data predict resistance to treatment in phonological awareness, decoding, and spelling? In I. Lundberg, F. E. Tonnessen, & I. Austad (Eds.), *Dyslexia: Advances in theory and practice* (pp. 245–254). Dordrecht: Kluwer.

Nolen, S. B. (2007). Young children's motivation to read and write: Developmental in social contexts. *Cognition and Instruction, 25*(2/3), 129–270.

Park, Y. (2011). How motivational constructs interact to predict elementary students' reading performance: Examples from attitudes and self-concept in reading. *Learning and Individual Differences, 21*, 347–358.

Pawson, R., Greenhalgh, T., Harvey, G., & Walshe, K. (2005). Realist review—A new method of systematic review designed for complex policy interventions. *Journal of Health Services Research & Policy, 10*(1), 21–34.

Pearson, P., & Hamm, D. (2005). The assessment of reading comprehension: A review of practices-past, present, and future. In S. G. Paris & S. A. Stahl (Eds.), *Children's reading comprehension and assessment* (pp. 13–69). Mahwah: Lawrence Erlbaum Associates Publishers.

Petscher, Y. (2010). A meta-analysis of the relationship between student attitudes towards reading and achievement in reading. *Journal of Research in Reading, 33*(4), 335–355.
Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54–67.
Schaffner, E., & Schiefele, U. (2013). The prediction of reading comprehension by cognitive and motivational factors: Does text accessibility during comprehension testing make a difference? *Learning and Individual Differences, 26*, 42–54.
Schaffner, E., Schiefele, U., & Ulferts, H. (2013). Reading amount as a mediator of the effects of intrinsic and extrinsic reading motivation on reading comprehension. *Reading Research Quarterly, 48*(4), 369–385. https://doi.org/10.1002/rrq.52.
Schaffner, E., Philipp, M., & Schiefele, U. (2014). Reciprocal effects between intrinsic reading motivation and reading competence? A crosslagged panel model for academic track and non-academic track students. *Journal of Research in Reading,* 1–18. doi: https://doi.org/10.1111/1467-9817.12027.
Schiefele, U. (1999). Interest and learning from text. *Scientific Studies of Reading, 3*, 257–279.
Schiefele, U., Schaffner, E., Moller, J., & Wigfield, A. (2012). Dimensions of reading motivation and their relation to reading behavior and competence. *Reading Research Quarterly, 47*, 427–463. https://doi.org/10.1002/RRQ0.30.
Schiefele, U., Stutz, F., & Schaffner, E. (2016). Longitudinal relations between reading motivation and reading comprehension in the early elementary grades. *Learning and Individual Differences, 51*, 49–58. https://doi.org/10.1016/j.lindif.2016.08.031.
Shell, D. F., Colvin, C., & Bruning, R. H. (1995). Self-efficacy, attributions, and outcome expectancy mechanisms in reading and writing achievement: Grade-level and achievement level differences. *Journal of Educational Psychology, 87*(3), 3867–3398.
Solheim, O. J. (2011). The impact of reading self-efficacy and task value on reading comprehension scores in different item formats. *Reading Psychology, 32*(1), 1–27.
Stahl, K. A. D., & McKenna, M. C. (Eds.). (2006). *Reading research at work: Foundations of effective practice*. New York: Guilford Press.
Stutz, F., Schaffner, E., & Schiefele, U. (2016). Relations among reading motivation, reading amount, and reading comprehension in the early elementary grades. *Learning and Individual Differences, 45*, 101–113. https://doi.org/10.1016/j.lindif.2015.11.022.
Tabassam, W., & Grainger, J. (2002). Self-concept, attributional style and self-efficacy beliefs of students with learning disabilities with and without attention deficit hyperactivity disorder. *Learning Disability Quarterly, 25*, 141–151.
Taboada, A., Tonks, S., Wigfield, A., & Guthrie, J. (2009). Effects of motivational and cognitive variables on reading comprehension. *Reading and Writing: An Interdisciplinary Journal, 22*, 85–106.
Van der Schuit, M., Segers, E., van Balkom, H., & Verhoeven, L. (2011). How cognitive factors affect language development in children with intellectual disabilities. *Research in Developmental Disabilities, 32*(5), 1884–1894.
Van Dyke, J., & Shankweiler, D. P. (2013). From verbal efficiency theory to lexical quality. In M. A. Britt, S. Goldman, & J. F. Rouett (Eds.), *Reading—From words to multiple texts*. New York: Routledge.
Verhoeven, L., & van Leeuwe, J. (2008). Prediction of the development of reading comprehension: A longitudinal study. *Applied Cognitive Psychology, 22*, 407–423. https://doi.org/10.1002/acp.1414.
Wang, J. H.-Y., & Guthrie, J. T. (2004). Modeling the effects of intrinsic motivation, extrinsic motivation, amount of reading, and past reading achievement on text comprehension between US and Chinese students. *Reading Research Quarterly, 39*(2), 162–186.
Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology, 89*, 420–432.
Wigfield, A., Guthrie, J., & Perencevich, K. (2004). Children's motivation for reading: Domain specificity and instructional influences. *The Journal of Educational Research, 97*(6), 299–309.