Motivational Aspects of Students’ Amount of Reading and Affective Reading Experiences in a School Context: A Large-Scale Study of Grades 6 and 9

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**ABSTRACT**

As leisure-time reading among adolescents declines in the western world, stakeholders try to increase students’ motivation for school-related reading. We examine the relationship of students’ autonomous and controlled reading motivation with their amount and experiences of school-related reading in four school subjects, controlling for students’ attitudes toward the school subjects and general attitudes toward reading. Questionnaire data were collected from 3308 students in Grades 6 and 9 at 144 schools in Sweden. Multiple linear regression indicates that students’ attitudes toward the subject are more important predictors of reading amount than their reading motivation. Motivation type was primarily related to students’ affective experiences of the reading, and only weakly related to their amount of school-related reading. Results suggest that the relationship between motivation and school-related reading differ from voluntary leisure-time reading. The study thus complements previous research which primarily has focused on the role of students’ motivation for their amount of leisure-time reading.

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Introduction

Prior research in the field of reading literacy has consistently shown that the amount of reading is predictive not only of reading ability, but also of students’ overall performance and achievement (Elley, 1992; European Commission, 2012; Krashen, 2009; Stanovich, Harrison, & West, 1995; Topping, Samuels, & Paul, 2007; Wigfield & Guthrie, 1997). As students reach middle school it also becomes increasingly important to read various types of texts (Kuhn, Schwanenflugel, Meisinger, Levy, & Rasinski, 2010; Kuhn & Stahl, 2003) in order to develop vocabulary and reading skills in different subjects (e.g., Biemiller, 2001; Hammerschmidt-Snidarich, Maki, & Adams, 2019; Stanovich et al., 1995).

There is solid evidence that practice makes perfect (e.g., Castles, Rastle, & Nation, 2018; Jonides, 2004; Schaffner, Schiefele, & Ulferts, 2013). Hence, extensive reading is required to develop the reading skills necessary for further education and participation in the society. It is therefore troubling that leisure-time reading is declining among young people in many parts of the Western world (Anderson, Wilson, & Fielding, 1988; Fasick, Gagnon, Howarth, & Setterington, 2005; Maynard, Mackay, Smyth, & Reynolds, 2007; Mullis, Martin, Foy, & Hooper, 2017). In Sweden too, there are alarming reports of declining reading habits among adolescents. According to data from the Swedish Media Council (2019), 11 percent of young people aged 13–19 read books or newspapers every day, compared to twice that number only six years earlier. It is also known from research that students spend relatively little time on reading at school. In PIRLS 2016, Swedish teachers report that only 12% of the total time at school is devoted to reading across the curriculum (Mullis et al., 2017). A recent study by Vinterek et al. (2020) reports a clear trend of decreasing amounts of school-related reading among students in Grades 6 and 9 over the past decade. A similar picture is emerging internationally (e.g., Merga, 2013; Swanson et al., 2016; Topping et al., 2007).

Several factors have been suggested to explain the decreasing amount of school-related reading, especially as students reach middle and lower-secondary school. But as of today, there are no large-scale studies that have been able to pinpoint which these factors might be. We do know from previous research, however, that it takes more than just skills to read extensively (Fielding & Pearson, 1994), particularly when considering reading across the whole curriculum (Santi & Reed, 2015) in subjects such as the natural and social sciences. Several studies have shown that students’ will to read, understood as intrinsic motivation, is strongly related to positive outcomes such as better reading comprehension (Bråten, Johansen, & Strømsø, 2017; Guthrie, Wigfield, Metsala, & Cox,
Moreover, we also know that according to research on children’s and teenagers’ leisure-time reading, intrinsic motivation appears to be predictive of larger amounts of non-school related reading (Alvermann et al., 2007; Baker & Wigfield, 1999; McKool, 2007; Troyer, Kim, Hale, Wantchekon, & Armstrong, 2019). The question that remains unanswered in the literature is thus: is autonomous (self-determined) motivation, including reading for intrinsic reasons, the main driving force also behind students’ amount of school-related reading, which takes place in a context in which external control and institutional pressures have become increasingly more dominant (Ryan & Deci, 2020).

We also know from previous research that students’ autonomous reading motivation is strongly associated with their view of themselves as readers; and students’ reading self-concept, in turn, has been shown to be predicated by previous reading experiences (McKenna, 1994; Morgan, Fuchs, Compton, Cordray, & Fuchs, 2008). That is, positive reading experiences lead to a stronger reading self-concept, while negative experiences have the opposite effect. Therefore, the objective of the present study is to investigate, from a self-determination perspective, how students’ motivation relates to (and possibly predicts) students’ amount and experience of reading fiction and nonfiction text in a school context. In other words, can the decreasing amount of school-related reading be explained by students’ lack of motivation?

The present study focuses on students’ reading of continuous school-related texts, fiction as well as nonfiction, in the school subjects Swedish (First Language, L1), English (Second Language, L2), Chemistry, and History. The choice of these four subjects will help to shed light on reading practices in school subjects that often differ in how reading is organized, the purpose of reading (e.g., fact search vs. interpretation), and the types of text students read. In addition, according to an earlier study (Vinterek, 2009), students’ amount of reading in these subjects is more voluminous than in other school subjects.

The present study is part of a larger research project entitled “To read or not to read: A study of reading practices in compulsory school”, funded by the Swedish Research Council. The results presented in this
article are based on predominantly quantitative data which are analyzed in light of self-determination theory with the aim to better understand how students’ motivation relates to their amount and experiences of reading in a school context. This aim is achieved by pursuing the following research questions:

1. How do students experience their school-related reading?
2. What types of motivation are students driven by in their school-related reading?
3. What is the relationship between students’ types of motivation and their amount of reading?
4. What is the relationship between students’ types of motivation and their affective experiences from their in-school reading?

For all research questions, separate analyses were made for fiction and nonfiction texts, for Grade 6 and Grade 9 students, and for reading in class and reading in total (in class and as homework), respectively. For questions 1, 3, and 4, separate analyses were also made for the subjects English (L2), History, Chemistry, and Swedish (L1).

**Theoretical Background**

**Motivation Type**

Self-determination theory (SDT) (Ryan & Deci, 2000) postulates that not only the quantity but also the type of motivation, referring to the extent to which a behavior is self-determined, has implications for behavior, performance and emotional experiences in academic situations. As to the type of motivation, a distinction is made between intrinsic motivation, where a person engages in an activity for its own sake (e.g., because it is enjoyable), and extrinsic motivation, which refers to doing something because it leads to a separable outcome (e.g., a good grade). Extrinsic motivation, in turn, consists of four subtypes which vary in their degree of perceived self-determination, or autonomy (Figure 1). The least autonomous form of extrinsic motivation is external regulation, where the individual acts only to obtain an externally imposed reward contingency, with no personal interest in the activity. Introjected regulation refers to behaviors resulting from interpersonal or intrapsychic contingencies or demands, such as a need to achieve high grades in order to preserve or increase self-worth (Ryan, 1982). Identified and integrated regulation, on the other hand, refers to situations where the person has identified and/or internalized the value of a behavior; hence the behavior is perceived as more self-determined, or autonomous, compared to external and
introjected regulation. In practice, external and introjected types of regulation are often merged under the umbrella term *controlled motivation*, while identified, integrated and intrinsic regulation often are joined together into a higher order factor called *autonomous motivation* (cf. Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015). The distinction between autonomous and controlled motivation is often preferred over the intrinsic–extrinsic distinction as both identified and integrated motivation—although extrinsic types of motivation—are characterized by a high level of perceived self-determination and therefore generate outcomes that are more similar to those of intrinsic motivation than to those of external and introjected motivation.

Studies indicate that autonomous and controlled motivation have differential relationships with, for example, goal progress (Koestner, Otis, Powers, Pelletier, & Gagnon, 2008), persistence (Ratelle, Guay, Vallerand, Larose, & Senecal, 2007), self-efficacy and self-regulation (Quick, Lipsky, & Nansel, 2018), cognition and emotions during learning (Ketonen, Dietrich, Moeller, Salmela-Aro, & Lonka, 2018; Winberg et al., 2014), school science and mathematics knowledge (Winberg & Palm, 2021) and out-of-school reading amount and reading comprehension (Troyer et al., 2019). Whereas autonomous motivation (self-determined behavior)
is positively related to personal growth, performance, emotions, and well-being, controlled motivation has been shown to have substantial and long-term negative effects (Deci & Ryan, 2008b; Ryan & Deci, 2020).

**The Relationship Between Motivation Type and Reading Amount**

Although they did not specifically study the concept of motivation, an early study by Guthrie, Schafer, Wang, and Afflerbach (1995) is interesting in this context as it looked at the relationships between instruction and the amount of reading among 9, 13 and 17-year-old students, exploring social, cognitive and instructional connections. Using path analyses, Guthrie and his team found that “At all age levels, classroom instruction was associated with amount and breadth of reading” (p. 22). However, instruction in reading was not likely to be associated with the amount and breadth of reading unless the teacher also a) provided for the development of interpersonal relationships that laid the foundation for shared reading and discussion of experiences derived from reading, and b) helped students learn and use a variety of cognitive strategies, such as notetaking, outlining, self-questioning, and using background knowledge. These findings are in line with both sociolinguistic and sociocultural perspectives on reading, as well as that of SDT which stresses the importance of a social context that fulfills the basic needs for autonomy, competence, and relatedness (Deci & Ryan, 2008a). Thus, Guthrie et al. conclude that the influence of instruction on the amount of reading was simultaneously mediated by the students’ awareness and use of cognitive strategies, as well as their social interactions surrounding reading. Even though they state that adding motivation to the variables used in their study would not likely have changed the pattern of relationships observed, they end by calling for further research on “motivational dispositions of students to become active readers, especially as [such dispositions] are related to academic structure, social participation, intellectual development and parental involvement in literacy instruction” (p. 23). The present study should be seen as a response to this call through its focus on the relation between reading motivation and amount of school-related reading.

Wigfield and Guthrie (1997) looked more specifically at the relation between reading motivation and reading amount and found that students with the highest levels of intrinsic motivation read nearly three times as many minutes per day than those with the lowest levels. However, their study does not answer the question whether this increase in reading amount was equally strong for school-related reading as it was for out of school reading.
The relationship between reading motivation and the amount of reading, both in and out of school, was followed up by Guthrie and colleagues in a series of studies. Guthrie et al. (1999) report that reading motivation was a direct predictor of reading amount, even when accounting for the contributions of previous achievement, passage comprehension, prior knowledge, and reading efficacy. Similarly, Guthrie and Cox (2001) investigated both motivational and cognitive qualities among students in Grades 3 and 5 and found that the “amount of reading for enjoyment [i.e., out of school] was predicted most highly by motivation” whereas “reading for school was predicted most highly by strategy use” (p. 116). That is, students who read a lot as part of their schoolwork are those who have learnt to read strategically, engaging in activities such as self-monitoring, rereading, seeking out the main idea of text, strategies which make them feel competent as readers. Guthrie and Cox also conclude that reading amount is socially mediated and that school reading in particular is a socially constructed practice to a high extent shaped by teacher assignments and expectations on students. These findings suggest that there are other factors besides intrinsic reading motivation that may predict students’ amount of reading in and for school, a conclusion that the present study builds on and seeks to investigate further.

Many studies on the relationship between motivation, reading amount, and reading comprehension have conceptualized motivation as extrinsic or intrinsic. As mentioned in the previous section, this conceptualization is problematic as extrinsic motivation comprise types of motivation (identified and integrated motivation) that are relatively self-determined and—unlike external and, to some extent introjected motivation—have been found to be associated with various positive outcomes (Ryan & Deci, 2020). Hence, such conceptualizations may obscure the effects of varying levels of perceived self-determination that underlie the extrinsic–intrinsic continuum in SDT, which often is referred to in these studies. This may explain why studies frequently find significant positive effects of intrinsic motivation on reading amount or reading comprehension, while extrinsic motivation is non-significantly or weakly negatively (Becker, McElvany, & Kortenbruck, 2010; Schaffner & Schiefele, 2016), or even positively (McGeown, Norgate, & Warhurst, 2012) associated with these outcomes. Despite the potential mitigation of negative effects of extrinsic motivation by using this operationalization, Schaffner et al. (2013) found significant negative effects of extrinsic motivation on both leisure-time reading amount and reading comprehension while intrinsic reading motivation had a significantly positive effect on the amount of reading. However, this negative effect of extrinsic motivation was only seen when extrinsic and intrinsic motivation were used together in the prediction model. Using both predictors together also increased the positive effects of
intrinsic motivation on reading amount, compared to using only intrinsic motivation as predictor. Schaffner et al. (2013) suggested that this outcome was due to reciprocal suppression effects, caused by the motivation types being strongly correlated while having opposite relationship with the amount of leisure time reading. The authors argued that neglecting suppression effects could explain the small or non-significant direct and indirect effects of extrinsic motivation on outcomes such as reading amount and reading comprehension seen in many studies. Hence, they argued, extrinsic and intrinsic motivation should not be used in isolation as predictors, as has been common practice in earlier studies. As to their results, Schaffner et al. (2013) suggested that they may be explained by the assumption that “extrinsically motivated readers do not consider voluntary leisure time reading as being instrumental for increasing their reading competence or achievements in school and, thus, reduce the amount of reading for enjoyment” (p. 381). Consequently, they suggest that “the amount of reading for school may increase at the expense of reading for enjoyment,” something which the present study investigates further.

One exception to the practice of conceptualizing motivation as extrinsic or intrinsic is the study by De Naeghel, Van Keer, Vansteenkiste, and Rosseel (2012), which not only distinguishes between autonomous and controlled motivation (rather than intrinsic and extrinsic) but also differentiates between frequency of leisure-time reading and school/home-work reading. The authors found an association between, on one hand, autonomous motivation for both recreational and academic reading and, on the other hand, frequency of leisure-time reading among students at late elementary school. However, no connection between reading motivation and the amount of school-related reading was found. Instead, they concluded that “reading a lot [in a recreational context] is not necessarily related to effective reading comprehension skills for elementary students” (p. 1017). Unfortunately, the study did not measure students’ academic reading frequency.

These findings clearly point to the need for further research into the relation between motivation and the quantity and quality of school-related reading practices.

In sum, we know from previous research that reading amount, school-related as well as leisure-time reading, is a strong predictor of various types of positive reading outcomes, such as fluency, performance and comprehension, as well as more general academic achievement and knowledge of the world. This accumulated knowledge base made Cox and Guthrie (2001) conclude that “As reading achievement and world knowledge are assumed to be important school outcomes, it is plausible that understanding the determinants of reading amount becomes a
valuable research goal” (p. 127). However, our brief review of previous studies on the relation between reading motivation and reading amount shows that this research goal has only been partly fulfilled. The present study therefore aims to pursue this research goal further by investigating specifically the relationship between students’ autonomous and controlled motivation for reading and their amount of school-related reading—in and out-of-school—and their reading experiences.

Method

Before the study was launched, informed consent was ensured from the local school authorities of each of the 18 participating municipalities in Sweden (6% of the total number of municipalities, 290). All principals and teachers of the classes involved were informed about the project and asked to participate and to allot time from their teaching for the completion of a questionnaire among their students. All students in Grades 6 and 9 who attended school on the day chosen for the survey were invited to take part. The students and their parents (or legal guardians) were informed about the aim of the project, about the research methods, that participation would be anonymous and voluntary, and of their right to decline or cease participation at any time. The questions asked were considered to be of the kind that did not expose the students to any harm.

The Swedish School System

The Swedish compulsory school system starts with a one-year preschool class the year children turn six and continues with the following three school stages: primary (Grades 1–3), middle (Grades 4–6) and lower secondary (Grades 7–9) school. Sweden has a system of both municipal and independent schools which are fully funded through a public voucher system. In 2017 (the year of the investigation) 15% of all students nationwide, in Grades 1–9, attended independent schools. (Skolverket, n.d.a).

Participants

In total 3485 students, from a total of 144 compulsory school units (130 public and 14 independent schools) completed the questionnaire. When screening the data, we found several individuals with questionable responses, for example, claiming to have studied all subjects during the day they completed the questionnaire, to have read an extreme number of pages in one subject (e.g., 3000), or to have read an unlikely number
of pages in more than one subject (we set the limit to 200 pages), or gave identical responses to all questionnaire items, obviously ignoring the polarity of items. If any of the above issues were found, the observation was removed from the dataset. After data cleaning, a total of 3406 students remained, of which 3308 cases contained information relevant for this paper, 1704 in Grade 6 (48.6% females, 1.5% unknown) and 1604 in Grade 9 (51.7% females, 1.8% unknown).

Two-sided independent sample t-tests indicate that there were no significant differences between the schools that completed the questionnaire and those that did not, concerning the proportion of students with foreign background (i.e., the student or both parents born outside Sweden) $t(114) = 1.243, p = .216$; the number of enrolled students, $t(161) = -0.244, p = .810$; the proportion of students in Grade 6 reaching the national goals in all subjects, $t(98) = -0.626, p = .533$; the proportion of students in Grade 9 reaching the national goals in all subjects, $t(48) = -0.790, p = .433$; the proportion of parents with post-secondary education, $t(158) = -0.861, p = .390$; and, when applicable, the proportion of students eligible for studies at vocational upper secondary level programs, $t(48) = -0.021, p = .984$; and average merit points in Grade 9, $t(41) = -0.704, p = .485$. Hence, we concluded that the dropout did not bias the data.

**Procedure**

To ensure that the questionnaires were answered at the end of an ordinary school day, when the students had a full day in school, the schools could choose for themselves on which day in a certain week they would ask their students to fill in the questionnaire. The questionnaires were distributed online to the teacher who was responsible for the last lesson on the chosen day. These teachers had also been informed in detail on how to instruct their students and how to explain key concepts in the survey. This was done in two steps; first the instructions were distributed to the principals of the schools to read, and then the principals instructed the teachers. The principal was also responsible for checking with the involved teachers to be sure they had understood the instructions. It took about 15–20 minutes for the students to complete the questionnaire. Admittedly, the amount of reading assignments obviously varies from day to day within a class and between classes. However, the large number of classes, and the fact that each class did not have to complete the questionnaire on the same day, was expected to yield a reasonably representative sample where reading did take place. Moreover, our decision to ask students how much they read, rather than asking teachers about the reading assignments they give the students, or their overall
estimations of their students’ reading practices, is based on the assumption that this would give a more accurate measure of students’ actual reading; as previous research has shown, being assigned a reading task does not necessarily mean that the student will fulfill it (Taylor, Frye, & Maruyama, 1990).

**The Survey**

In the analyses of the relationship between students’ motivation and reading amount and affective reading experiences, we needed to control for students’ general attitude toward reading and toward the respective subjects. Including these variables, which often show moderate correlation with different aspects of reading achievement (e.g., Petscher, 2010), may further increase the predictive validity of the regression models (Lo, 2012). In the questionnaire, students were therefore asked to rate on a 5-grade Likert-type scale how they felt about reading fiction and non-fiction that is not part of their schoolwork (i.e., reading attitude). The item was “In general, what do you think of reading [fictional/nonfictional] texts that are NOT part of your schoolwork?” Next, students were asked to affectively assess the school subjects they had the day they completed the questionnaire (i.e., subject attitude). The item was “What I think about the subject.” The response alternatives for these items were: Very bad, Pretty bad, Neither bad nor good, Pretty good, and Very good.

Students were also asked how many pages of continuous fiction or nonfiction text they had read in class in the subjects during the day they completed the questionnaire, or as homework to that day. In case they had read a page or more in a subject, they were asked specifically about their experience of that reading (1 item), rated on the same scale as reading and subject attitudes.

As our previous studies have shown that students are quite clear about how they feel about their schoolwork, reflected in very high levels of consistency between items, we decided to measure students’ feelings about non-school related reading by only one item to avoid overburdening students. As Goetz, Sticca, Pekrun, Murayama, and Elliot (2016) point out, “by requiring more time to respond, multi-item scales might end up assessing participants’ emotional response to completing the questionnaire, rather than their emotions concerning the classroom activity that they are currently engaged in.” Indeed, in the open questions in our questionnaire, some students did express irritation over the length of the questionnaire. The use of single items to assess perceptively clear phenomena was supported by Gogol et al. (2014) who found satisfactory levels of reliability for both single-item and multiple-item scales, substantial correlations between the scales, and similar correlational patterns
with external criteria. The single item approach to assess perceptively distinct phenomena is common in experience sampling methodology (e.g., Hektner, Schmidt, & Csikszentmihalyi, 2007), and we considered this practice to be both adequate and necessary in our case to avoid careless responses and high drop-out rates.

Lastly, students were asked why they read school-related texts in class and as homework (i.e., their motivation type, see below). As students were assumed to have a less clear picture of their motives for reading, compared to their affective assessment of reading and the respective subjects, this construct was assessed by multiple items. Items on students’ motivation type were adapted from a subset of the Academic Self-Regulation Questionnaire (SRQ-A; Deci & Ryan, 1999), intended to measure the extrinsic–intrinsic motivation continuum in self-determination theory (SDT; Ryan & Deci, 2000). In total, 18 items were used, assessing four types of reasons for students’ engagement in school-related reading, with an equal focus on in-school reading and reading as homework. For items assessing motivation for in-school reading, the stem was “Why do you read in your lessons?.” For items assessing reading as homework, the stem was “Why do you read texts at home that are associated with your schoolwork?” Students were asked to rate to what extent each of the listed reasons applied to their situation by choosing between four responses (Fully agree; Mostly agree; Mostly disagree; Fully disagree). Sample items, indicating different reasons for reading, are: external motivation (“I read because I don’t want the teacher to be disappointed with me,” 4 items), introjected motivation (“I read because I will feel ashamed if I don’t,” 4 items), identified motivation (“I read because I want to learn new things,” 4 items), and intrinsic motivation (“I read because I like it,” 6 items).

Preliminary factor analyses showed that the models on students’ motivation for in-school reading and for homework reading were nearly identical. Therefore, the items were analyzed together to produce an overall measure of students’ motivation for school-related reading. The Kaiser-Meier-Olkin Measure of sampling adequacy (KMO) was 0.875, well above the recommended value of .6, and Bartlett’s test of sphericity was significant $\chi^2 = 31200.704$, df = 153, $p < .001$. Thus, the data were considered appropriate for confirmatory factor analysis, which was performed in the SPSS addon AMOS. To evaluate the CFA models, we used four goodness-of-fit indices: root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and Tucker-Lewis index (TLI). Acceptable fit according to RMSEA and SRMR is < .08 (Browne & Cudeck, 1992; Hu & Bentler, 1998), even if an RMSEA < .06 is desirable (Hu & Bentler, 1999). For CFI and
TLI, cutoffs are generally > .90 (Bentler & Bonett, 1980), but > .95 is desirable (Hu & Bentler, 1999).

The tested two-factor model comprised the autonomous (i.e., identified and intrinsic) and controlled (i.e., external and introjected) motivation types, respectively. To achieve acceptable fit of the model, theoretically justifiable correlations between some error terms were allowed. For example, in the construct of autonomous motivation, following Wang and Wang (2012), due to similar meaning of the items, error terms were allowed to correlate between the items “I read because it is fun” and “I read because I like it” both within and between the respective reading contexts (in-school and homework). Similarly, correlations were allowed between the error terms of “...because I want to learn” and “...because it is important to me” within and between contexts. For controlled motivation, error terms were allowed to correlate between the items “…because I want the teacher to think I am a good student” and “I read because I do not want the teacher to become disappointed with me.”

For this model, \( \chi^2 = 2137.461, df = 123, p > .001 \) while CFI = .935, TLI = .910, and RMSEA = .078. Although not optimal, we judged the fit to be acceptable and the factors adequate indicators of students’ controlled and autonomous motivation, respectively.

**Data Analysis**

The analyses aimed to examine the relationship between students’ motivation for reading and their amount of reading. Analyses were made for both fiction and nonfiction texts, for in-school and in-school plus homework reading combined, and in the four respective subjects, which resulted in a total of 16 reading outcomes for Grade 6 and Grade 9, respectively. Since students were nested within classes and schools, a multi-level regression analysis would have been preferable. However, Intraclass Correlation Coefficients, ICC(1), and the reliabilities of class level means, ICC(2), indicated that 11 of the 16 predictor and outcome variables were not suitable for aggregation on class level as their ICC (1) was below 0.07 and/or the ICC (2) below 0.7 (nine of them between 0 and .5). These cutoff values align with common “rules of thumb” (e.g., Lam, Ruzek, Schenke, Conley, & Karabenick, 2015) and are more conservative than the empirically based guidelines by Woehr, Loignon, Schmidt, Loughry, and Ohland (2015), who suggested a cutoff value of .21 for ICC(1) and .68 for ICC(2). Hence, multilevel analyses were deemed inappropriate and multiple regression analyses were performed on student level only. Predictor variables were entered into the model simultaneously. For all models, multicollinearity was within acceptable limits (Tolerance statistic > 0.2) and residuals were independent.
Results

As a background to the main results regarding the relationship between students’ motivation and their experience and amount of school-related reading, we first briefly present data on students’ general attitudes toward non-school-related reading (Table 1) as well as on their affective experience of (Table 2), and type of motivation for (Table 3) school-related reading. These data are also used as control variables in the subsequent multiple linear regression analyses.

Students’ General Attitudes toward Non-School-Related Reading

On average, students in Grades 6 and 9 were positive toward reading both fiction and nonfiction texts that are not related to their schoolwork. However, Grade 6 students reported significantly more positive attitudes than students in Grade 9. This was true for both nonfiction and fiction (Table 1).

Students’ Experiences of Subject Specific In-School Reading

As seen in Table 2, students’ experiences of their in-school reading were mostly favorable (i.e., leaning toward 4 on the 5-grade scale). Differences between the grades were more pronounced for nonfiction reading, where Grade 6 students were more positive than Grade 9 students. For fiction reading, however, the only significant difference was in the subject of Swedish (L1), again with Grade 6 students indicating a more positive reading experience than those in Grade 9.

Table 1. Attitudes toward non-school-related fiction and nonfiction reading, rated on a 5-point Likert-type scale.

| Genre     | Grade | N   | M (SD)   | Δ M | t    | df    | p    | 95% CI of Δ M |
|-----------|-------|-----|----------|-----|------|-------|------|----------------|
|           |       |     |          |     |      |       |      | Lowest | Highest |
| Nonfiction| 6     | 1688| 3.36 (0.02)| 0.410| 11.311| 3283  | <.001| .340  | .476    |
|           | 9     | 1597| 2.95 (0.03)|     |       |       |      |       |         |
| Fiction*  | 6     | 1688| 3.66 (0.02)| 0.517| 13.270| 3164.5| <.001| .441  | .597    |
|           | 9     | 1597| 3.15 (0.03)|     |       |       |      |       |         |

*Non equal variances assumed.

Differences between Grade 6 and Grade 9.
As reported in the methods section, confirmatory factor analyses were performed to validate the constructs of autonomous and controlled motivation and to calculate students’ factor scores on the respective constructs for the regression analysis of the relationship between students’ motivation type and the amount of school-related reading. These factor scores were also used in the tests of differences in the types of motivation between Grades 6 and 9 in what follows.

However, for the sake of interpretability, means of students’ responses to the items within the respective construct, rather than factor scores, are given in Table 3. These means indicate that students were relatively motivated to read, as they ranged between 2.5 and 3 on a 4-grade scale for both autonomous and controlled motivation. In terms of factor scores, Grade 6 students showed significantly higher scores than Grade 9 on the autonomous motivation construct, t(2676) = 14.303, p < .001, while

### Table 2. Students’ experiences of their in-school reading in the respective subjects, rated on a 5-point Likert-type scale.

| Genre and subject | Grade | N   | Mean | Δ_	ext{mean} | t    | df | p      | 95% CI of Δ | Lower | Upper |
|-------------------|-------|-----|------|--------------|------|----|--------|-------------|-------|-------|
| Nonfiction        |       |     |      |              |      |    |        |             |       |       |
| English (L2)^a     | 6     | 450 | 3.90 | −0.31        | 4.154| 616| 0.000* |             | 0.1657| 0.4627|
|                   | 9     | 317 | 3.58 |              |      |    |        |             |       |       |
| History^a          | 6     | 171 | 3.91 | −0.23        | 2.128| 335| 0.034  |             | 0.0173| 0.4389|
|                   | 9     | 171 | 3.68 |              |      |    |        |             |       |       |
| Chemistry^a        | 6     | 120 | 3.67 | −0.39        | 2.347| 129| 0.020  |             | 0.0608| 0.7126|
|                   | 9     | 75  | 3.28 |              |      |    |        |             |       |       |
| Swedish (L1)^a     | 6     | 536 | 3.97 | −0.33        | 5.082| 752| 0.000* |             | 0.2024| 0.4573|
|                   | 9     | 368 | 3.64 |              |      |    |        |             |       |       |
| Fiction            |       |     |      |              |      |    |        |             |       |       |
| English (L2)^a     | 6     | 119 | 3.82 | −0.19        | 1.255| 205| 0.211  | −0.1068     | 0.4811|
|                   | 9     | 110 | 3.64 |              |      |    |        |             |       |       |
| History            | 6     | 15  | 3.53 | −0.06        | 0.164| 70 | 0.870  | −0.6657     | 0.7850|
|                   | 9     | 57  | 3.47 |              |      |    |        |             |       |       |
| Chemistry          | 6     | 21  | 3.48 | −0.59        | 1.302| 37 | 0.201  | −0.3270     | 1.5016|
|                   | 9     | 18  | 2.89 |              |      |    |        |             |       |       |
| First language     | 6     | 441 | 4.17 | −0.42        | 5.327| 692| 0.000* |             | 0.2642| 0.5728|
|                   | 9     | 253 | 3.75 |              |      |    |        |             |       |       |

^aNon-equal variance assumed.
^bSignificant after Holm-Bonferroni correction for multiple comparisons (α = .05)

### Students’ Type of Motivation for School-Related Reading

As reported in the methods section, confirmatory factor analyses were performed to validate the constructs of autonomous and controlled motivation and to calculate students’ factor scores on the respective constructs for the regression analysis of the relationship between students’ motivation type and the amount of school-related reading. These factor scores were also used in the tests of differences in the types of motivation between Grades 6 and 9 in what follows.

### Table 3. Statistics of students’ responses on the 4-grade Likert-type motivation scales, indicating their perceived reasons for engaging in school-related reading.

| Construct                | Grade | Girls | Boys |
|--------------------------|-------|-------|------|
|                          |       | N     | M    | SD   | N   | M    | SD   |
| Autonomous motivation    | 6     | 822   | 2.93 | 0.69 | 842 | 2.87 | 0.74 |
|                          | 9     | 801   | 2.54 | 0.74 | 709 | 2.50 | 0.79 |
| Controlled motivation    | 6     | 813   | 2.62 | 0.70 | 835 | 2.63 | 0.76 |
|                          | 9     | 805   | 2.68 | 0.71 | 711 | 2.60 | 0.76 |
no significant differences between the grades could be found for controlled motivation $t(2676) = 0.560, p = .576$.

**The Relationship Between Students’ Motivation and Amount of School-Related Reading**

Students’ motivation explained only 1–15% of the number of whole pages read in the respective four subjects, either in class only or in class and as homework combined, in Grade 6 (Table 4) and Grade 9 (Table 5). This shows that the relationship between students’ general motivation for reading (including controlled and autonomous motivation, subject attitude and reading attitude) and their amount of reading in class was weak. Interestingly, the only significant model after Holm-Bonferroni correction in Grade 6 is the one explaining fiction reading in Swedish (L1) followed by several “near significant” ($p = .02$) models that include fiction reading as homework (Table 4), while models explaining nonfiction reading (regardless if it is in-school only or including homework) are far from significant. Although motivation in general has a low explanatory value, controlled and autonomous motivation are still the strongest predictors of students’ amount of reading in our model, while their attitude toward the subject and toward non–school-related reading in general (fiction and nonfiction, respectively) do not contribute much to the explanatory ability of the models in Grade 6.

As seen in Table 5, only three models in Grade 9 have significant or near significant explanatory ability. In these cases, mostly referring to Swedish (L1) fiction reading, students’ attitudes toward the subject and toward reading in general seem more important than motivation type for predicting reading amount. As in Grade 6, students’ attitudes toward non–school-related reading in general are positively associated with the amount of reading. However, in contrast to Grade 6, students’ attitudes toward the subject (when significant) are consistently negatively related to students’ amount of reading in Grade 9.

In brief, our analyses of the relation between student motivation and reading amount indicate that even though students in Grade 6 in general scored higher on all motivational factors, there is no consistent pattern that high levels of motivation are associated with large amounts of school-related reading.

**The Relationship Between Motivation and Experiences of In-School Reading**

As can be seen in Tables 6 and 8, the regression models explain up to 59% (Median 40%) of the variation in students’ experiences of reading.
Table 4. Multiple linear regression analysis explaining 6th grade students’ amount of reading by controlled and autonomous motivation, and attitude toward the subject and toward reading in general.

|                | Autonomous motivation $\beta$ $^b$ (p) | Controlled motivation $\beta$ $^b$ (p) | Subject attitude $\beta$ $^b$ (p) | Reading attitude $\beta$ $^b$ (p) |
|----------------|----------------------------------------|----------------------------------------|-----------------------------------|--------------------------------|
|                | $R^2$ | $F$ | $df_1$ | $df_2$ | $p$ | Const.$^a$ | $\beta$ | $p$ | $\beta$ | $p$ | $\beta$ | $p$ | $\beta$ | $p$ |
| Nonfiction     |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| In class       |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| English (L2)   | 0.07 | 0.49 | 4      | 436    | .75 | 1.44       | 0.04   | .51 | 0.03    | .57 | 0.02    | .76 | 0.02    | .72 |
| History        | 0.02 | 0.75 | 4      | 171    | .56 | 4.11       | 0.08   | .36 | 0.06    | .45 | -0.06   | .51 | 0.07    | .38 |
| Chemistry      | 0.02 | 0.47 | 4      | 109    | .76 | 0.55       | -0.03  | .74 | 0.07    | .51 | 0.07    | .47 | 0.07    | .44 |
| Swedish (L1)   | 0.01 | 0.90 | 4      | 625    | .46 | 5.05       | 0.08   | .12 | -0.00   | .94 | -0.08   | .10 | -0.01   | .89 |
| In class + Homework |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| English (L2)   | 0.04 | 0.15 | 4      | 453    | .97 | 1.70       | 0.02   | .68 | -0.01   | .91 | 0.02    | .75 | 0.01    | .85 |
| History        | 0.01 | 0.52 | 4      | 176    | .59 | 4.36       | 0.06   | .50 | 0.05    | .52 | -0.05   | .56 | 0.07    | .41 |
| Chemistry      | 0.01 | 0.42 | 4      | 116    | .80 | 0.50       | -0.05  | .57 | 0.03    | .80 | 0.11    | .28 | 0.03    | .74 |
| Swedish (L1)   | 0.01 | 1.27 | 4      | 657    | .28 | 5.70       | 0.04   | .39 | 0.03    | .29 | -0.07   | .12 | 0.05    | .29 |
| Fiction        |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| In class       |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| English (L2)   | 0.04 | 2.35 | 4      | 235    | .06 | 0.63       | 0.04   | .63 | -0.18   | .01 | 0.09    | .21 | -0.07   | .36 |
| History        | 0.11 | 1.82 | 4      | 60     | .14 | -0.93      | -0.42  | .02 | 0.21    | .13 | 0.24    | .12 | -0.01   | .97 |
| Chemistry      | 0.10 | 1.08 | 4      | 41     | .38 | 1.14       | 0.22   | .21 | 0.16    | .36 | -0.05   | .76 | -0.06   | .71 |
| Swedish (L1)   | 0.04 | 6.63 | 4      | 563    | .00$^*$ | 3.49 | 0.14   | .01 | -0.10   | .02 | -0.02   | .74 | 0.10    | .05 |
| In class + Homework |      |    |        |        |    |            |        |    |        |    |        |    |        |    |
| English (L2)   | 0.05 | 3.00 | 4      | 249    | .02 | -1.19      | 0.02   | .80 | -0.18   | .01 | 0.11    | .09 | 0.03    | .68 |
| History        | 0.15 | 3.31 | 4      | 73     | .02 | -1.07      | -0.46  | .00 | 0.27    | .03 | 0.17    | .18 | 0.11    | .38 |
| Chemistry      | 0.10 | 1.39 | 4      | 41     | .25 | 1.42       | 0.26   | .14 | 0.15    | .36 | -0.06   | .71 | -0.09   | .56 |
| Swedish (L1)   | 0.02 | 2.98 | 4      | 597    | .02 | 10.95      | 0.11   | .03 | 0.04    | .35 | -0.06   | .23 | 0.05    | .36 |

$^a$Constant is unstandardized.
$^b\beta$ is standardized.
$^*$Significant after Holm-Bonferroni correction for multiple comparisons.
Table 5. Multiple linear regression analysis explaining 9\(^{th}\) grade students’ amount of reading by their controlled and autonomous motivation, and attitude toward the subject and toward reading in general.

|                     | $R^2$ | $F$  | $df1$ | $df2$ | $p$  | Const $^a$ | Autonomous motivation $\beta$ $^b$ ($p$) | Controlled motivation $\beta$ $^b$ ($p$) | Subject attitude $\beta$ $^b$ ($p$) | Reading attitude $\beta$ $^b$ ($p$) |
|---------------------|------|------|-------|-------|------|-----------|-----------------------------------------|----------------------------------------|--------------------------------------|--------------------------------------|
|                     |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| **Nonfiction**      |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| *In class*          |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| English (L2)        | 0.01 | 1.04 | 4     | 351   | .39  | 0.38      | 0.08 (.24)                             | -0.02 (.76)                           | 0.03 (.62)                           | 0.04 (.51)                           |
| History             | 0.02 | 1.82 | 4     | 151   | .13  | 0.70      | 0.11 (.27)                             | 0.02 (.85)                            | 0.07 (.46)                           | 0.08 (.43)                           |
| Chemistry           | 0.00 | 0.00 | 4     | 51    | 1.00 | 1.64      | 0.00 (1.00)                           | 0.03 (.87)                            | 0.03 (.85)                           | -0.02 (.89)                          |
| Swedish (L1)        | 0.02 | 2.64 | 4     | 456   | .03  | 6.92      | -0.01 (.82)                           | -0.13 (.01)                           | -0.05 (.31)                          |                                      |
| *In class + Homework* |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| English (L2)        | 0.01 | 0.84 | 4     | 368   | .50  | 0.58      | 0.07 (.24)                             | -0.04 (.48)                           | 0.01 (.81)                           | 0.04 (.56)                           |
| History             | 0.05 | 2.18 | 4     | 152   | .07  | -0.60     | 0.06 (.53)                             | 0.07 (.41)                            | 0.14 (.13)                           | 0.04 (.64)                           |
| Chemistry           | 0.13 | 1.98 | 4     | 51    | .11  | -7.60     | 0.02 (.91)                             | -0.24 (.11)                           | 0.22 (.20)                           | 0.23 (.14)                           |
| Swedish (L1)        | 0.02 | 2.07 | 4     | 472   | .08  | 6.92      | 0.14 (.02)                             | 0.02 (.71)                            | -0.10 (.06)                          | -0.05 (.34)                          |
| **Fiction**         |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| *In class*          |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| English (L2)        | 0.01 | 0.82 | 4     | 225   | .51  | -2.10     | -0.14 (.87)                            | -0.01 (.91)                           | 0.12 (.09)                           | 0.02 (.78)                           |
| History             | 0.05 | 2.29 | 4     | 89    | .07  | 11.2      | 0.24 (.04)                             | -0.03 (.81)                           | -0.30 (.01)                          | 0.04 (.72)                           |
| Chemistry           | 0.11 | 0.60 | 4     | 19    | .67  | -0.10     | 0.1 (.76)                              | 0.13 (.57)                            | -0.35 (.23)                          | 0.01 (.97)                           |
| Swedish (L1)        | 0.03 | 2.58 | 4     | 381   | .04  | 8.87      | 0.08 (.19)                             | 0.02 (.73)                            | -0.10 (.10)                          | 0.12 (.05)                           |
| *In class + Homework* |      |      |       |       |      |           |                                        |                                        |                                      |                                      |
| English (L2)        | 0.03 | 1.96 | 4     | 234   | .10  | -6.32     | 0.03 (.65)                             | -0.05 (.45)                           | 0.08 (.23)                           | 0.12 (.10)                           |
| History             | 0.08 | 2.12 | 4     | 92    | .09  | 9.50      | 0.23 (.05)                             | -0.05 (.64)                           | -0.27 (.02)                          | 0.07 (.57)                           |
| Chemistry           | 0.10 | 0.10 | 4     | 21    | .67  | 2.32      | 0.08 (.80)                             | 0.09 (.67)                            | -0.32 (.23)                          | 0.06 (.82)                           |
| Swedish (L1)        | 0.04 | 3.95 | 4     | 387   | .00* | 9.43      | 0.05 (.45)                             | -0.01 (.78)                           | -0.12 (.03)                          | 0.19 (.00)                           |

*Constant is unstandardized.

$^b$β is standardized.

*Significant after Holm-Bonferroni correction for multiple test ($\alpha = .05$).
Table 6. Multiple linear regression analysis explaining 6\textsuperscript{th} grade students’ experiences of reading by controlled and autonomous motivation, and attitude toward the subject and toward reading in general.

|                  | $R^2$ | $F$     | $df_1$ | $df_2$ | $p$   | Const \(^a\) | Autonomous motivation $\beta$ \(^b\) (p) | Controlled motivation $\beta$ \(^b\) (p) | Subject attitude $\beta$ \(^b\) (p) | Reading attitude $\beta$ \(^b\) (p) |
|------------------|-------|---------|--------|--------|-------|--------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| **Nonfiction**    |       |         |        |        |       |              |                                    |                                    |                                    |                                    |
| **In class**      |       |         |        |        |       |              |                                    |                                    |                                    |                                    |
| English (L2)      | 0.40  | 53.769  | 4      | 329    | .00*  | 1.432        | 0.19 (.00)                       | 0.01 (.82)                       | 0.48 (.00)                       | 0.13 (.01)                       |
| History           | 0.27  | 11.135  | 4      | 122    | .00*  | 2.165        | 0.08 (.38)                       | 0.06 (.44)                       | 0.44 (.00)                       | 0.07 (.40)                       |
| Chemistry         | 0.27  | 7.205   | 4      | 77     | .00*  | 1.501        | 0.03 (.78)                       | 0.02 (.88)                       | 0.38 (.00)                       | 0.33 (.00)                       |
| Swedish (L1)      | 0.32  | 46.715  | 4      | 399    | .00*  | 1.957        | 0.24 (.00)                       | 0.00 (.94)                       | 0.31 (.00)                       | 0.18 (.00)                       |
| **Homework**      |       |         |        |        |       |              |                                    |                                    |                                    |                                    |
| English (L2)      | 0.49  | 23.401  | 4      | 97     | .00*  | 1.772        | 0.30 (.00)                       | 0.03 (.70)                       | 0.49 (.00)                       | −0.02 (.79)                      |
| History           | 0.14  | 1.968   | 4      | 48     | .12   | 2.996        | 0.24 (.10)                       | 0.05 (.74)                       | 0.02 (.91)                       | 0.22 (.19)                       |
| Chemistry         | 0.59  | 4.361   | 4      | 12     | .02   | 3.142        | 0.51 (.06)                       | 0.32 (.22)                       | 0.11 (.56)                       | −0.01 (.96)                      |
| Swedish (L1)      | 0.31  | 13.246  | 4      | 117    | .00*  | 1.483        | 0.25 (.01)                       | −0.02 (.80)                      | 0.31 (.00)                       | 0.18 (.03)                       |
| **Fiction**       |       |         |        |        |       |              |                                    |                                    |                                    |                                    |
| **In class**      |       |         |        |        |       |              |                                    |                                    |                                    |                                    |
| English (L2)      | 0.21  | 5.645   | 4      | 84     | .00*  | 2.609        | 0.20 (.11)                       | 0.12 (.25)                       | 0.36 (.00)                       | −0.06 (.59)                      |
| History           | 0.16  | 1.074   | 4      | 22     | .39   | 2.671        | 0.28 (.27)                       | −0.15 (.47)                      | 0.23 (.30)                       | −0.01 (.96)                      |
| Chemistry         | 0.28  | 30.488  | 4      | 318    | .00*  | 2.785        | 0.33 (.00)                       | −0.04 (.39)                      | 0.15 (.01)                       | 0.16 (.01)                       |
| Swedish (L1)      | 0.32  | 9.212   | 4      | 79     | .00*  | 2.136        | 0.41 (.00)                       | −0.19 (.07)                      | 0.22 (.07)                       | 0.05 (.69)                       |

\(^a\)Constant is unstandardized.

\(^b\)\(\beta\) is standardized.

\(^*\)Significant after Holm-Bonferroni correction for multiple test (\(\alpha = .05\)).
Hence, the relationship between students’ motivation and their affective reading experience reported in direct relation to their reading is very strong, regardless of grade, subject, type of text, or whether reading takes place at school or at home.

In both grades, students’ attitudes toward the subject and toward non–school-related reading show the most significant and positive relationships with students’ experiences of in-school reading. However, whereas autonomous motivation contributes significantly to students’ reading experiences in Grade 6, controlled motivation is the stronger predictor in Grade 9. Swedish (L1) and English (L2) are the subjects in which these differences are most accentuated. In short, students in both grades respond positively to reading in the subjects they like but liking a subject does not make them read more. Notably, the sample sizes were very small (<10) for fiction reading in history and chemistry, possibly an effect of fiction reading being unusual in these subjects. Due to the small samples, we did not find it meaningful to interpret these, far from significant, models and they were therefore omitted in Tables 6 and 7.

Discussion

Students’ Experiences of Their In-School Reading

Although the amount of school-related reading evidently is limited for many students (Vinterek et al., 2020), when assigned a reading task, they generally seemed to enjoy their in-school subject-specific reading. Students’ experiences of their reading were in general less positive in Grade 9 than in Grade 6 for all subjects and types of text. Nevertheless, both age groups did rate their reading of fiction as well as nonfiction with a high degree of favorability in most subjects. In fact, the ratings for school reading were even more positive than for non–school-related leisure-time reading. Admittedly, the group who read in school constitutes a subsample of the population that answered the question about their attitudes toward leisure-time reading and there is a possibility that the group who read in school were more positive toward reading in general than the average student. However, as motivation for reading had a very weak relation to the amount of in-school reading, we argue that this subsample was not necessarily positively biased toward reading. Hence, we suggest that the generally positive experiences of in-school reading reported by these students are representative for the average student. These findings indicate that there is an unexploited potential for increased reading across the curriculum as it is reasonable to expect that if teachers make the students read more, it is quite likely that students will find it positive, which in turn will increase their reading self-concept (McKenna, 1994; Morgan et al., 2008).
Table 7. Multiple linear regression analysis explaining 9th grade students’ experiences of reading by controlled and autonomous motivation, and attitude toward the subject and toward reading in general.

|                          | $R^2$ | $F$   | $df_1$ | $df_2$ | $p$  | Const. $^a$ | Autonomous motivation $\beta$ $^b$ (p) | Controlled motivation $\beta$ $^b$ (p) | Subject attitude $\beta$ $^b$ (p) | Reading attitude $\beta$ $^b$ (p) |
|--------------------------|-------|-------|--------|--------|------|-------------|-----------------------------------------|----------------------------------------|----------------------------------|----------------------------------|
| **Nonfiction** In class  |       |       |        |        |      |             |                                         |                                        |                                  |                                  |
| English (L2)             | 0.33  | 27.859| 4      | 224    | .00* | 1.62        | 0.03 (.63)                              | 0.15 (.02)                             | 0.52 (.00)                       | −0.04 (.46)                      |
| History                  | 0.47  | 22.935| 4      | 102    | .00* | 1.83        | 0.22 (.01)                              | 0.07 (.36)                             | 0.43 (.00)                       | 0.14 (.09)                      |
| Chemistry                | 0.54  | 10.089| 4      | 34     | .00* | 1.77        | 0.26 (.18)                              | 0.13 (.34)                             | 0.32 (.08)                       | 0.20 (.14)                      |
| Swedish (L1)             | 0.26  | 22.171| 4      | 258    | .00* | 2.79        | 0.25 (.00)                              | 0.18 (.00)                             | 0.21 (.00)                       | 0.06 (.31)                      |
| **Homework**             |       |       |        |        |      |             |                                         |                                        |                                  |                                  |
| English (L2)             | 0.44  | 12.911| 4      | 66     | .00* | 1.57        | 0.27 (.02)                              | 0.12 (.27)                             | 0.42 (.00)                       | 0.07 (.48)                      |
| History                  | 0.48  | 9.431 | 4      | 41     | .00* | 1.57        | 0.11 (.50)                              | 0.16 (.24)                             | 0.26 (.09)                       | 0.34 (.02)                      |
| Chemistry                | Sample size < 10 |       |        |        |      |             |                                         |                                        |                                  |                                  |
| Swedish (L1)             | 0.24  | 5.101 | 4      | 64     | .00* | 3.13        | 0.29 (.06)                              | 0.20 (.12)                             | 0.06 (.66)                       | 0.05 (.72)                      |
| **Fiction** In class     |       |       |        |        |      |             |                                         |                                        |                                  |                                  |
| English (L2)             | 0.26  | 6.758 | 4      | 75     | .00* | 1.41        | 0.13 (.28)                              | 0.05 (.65)                             | 0.46 (.00)                       | −0.01 (.95)                     |
| History                  | 0.26  | 2.739 | 4      | 32     | .05  | 3.26        | 0.38 (.05)                              | 0.10 (.63)                             | 0.09 (.62)                       | 0.03 (.86)                      |
| Chemistry                | Sample size < 10 |       |        |        |      |             |                                         |                                        |                                  |                                  |
| Swedish (L1)             | 0.27  | 17.112| 4      | 188    | .00* | 1.98        | 0.15 (.05)                              | 0.01 (.90)                             | 0.21 (.00)                       | 0.28 (.00)                      |
| **Homework**             |       |       |        |        |      |             |                                         |                                        |                                  |                                  |
| English (L2)             | 0.4   | 6.170 | 4      | 37     | .00* | 0.64        | −0.19 (.26)                             | 0.38 (.01)                             | 0.44 (.00)                       | 0.15 (.35)                      |
| History                  | 0.4   | 2.334 | 4      | 14     | .11  | 1.82        | 0.21 (.47)                              | 0.20 (.55)                             | 0.09 (.82)                       | 0.26 (.47)                      |
| Chemistry                | Sample size < 10 |       |        |        |      |             |                                         |                                        |                                  |                                  |
| Swedish (L1)             | 0.15  | 2.503 | 4      | 55     | .05  | 3.21        | −0.02 (.93)                             | 0.32 (.02)                             | −0.09 (.54)                      | 0.26 (.10)                      |

$^a$Constant is unstandardized.

$^b$β is standardized.

$^c$Significant after Holm-Bonferroni correction for multiple test (α = .05).
Students’ Motivation for School-Related Reading

Our results indicate that students’ level of autonomous motivation for reading decreases as students reach secondary school, while their controlled motivation remain roughly the same (Table 1). As a net result, students seem to become more externally controlled than autonomously motivated for in-school reading, a conclusion that is in line with previous research which has found that intrinsic motivation declines after elementary school (Corpus, McClintic-Gilbert, & Hayenga, 2009; Gillet, Vallerand, & Lafrenière, 2012; Scherrer & Preckel, 2019; Taylor et al., 2014; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). This trend of decreasing levels of autonomous motivation as students grow older follows that of students’ changing experiences of in-school reading in the studied subjects as well as their changing attitudes toward non-school-related reading. On average, students in Grade 9 are less positive toward reading, school related as well as non-school related, compared to students in Grade 6. These findings are fully in line with earlier large-scale studies which have seen the same trend starting already from first grade (McKenna, Conradi, Lawrence, Jang, & Meyer, 2012; Petscher, 2010).

The Relationship Between Students’ Motivation and Amount of Reading

For leisure-time reading, previous research has shown that students’ intrinsic motivation, a subconstruct of autonomous motivation, is associated with larger amounts of reading (Alvermann et al., 2007; Baker & Wigfield, 1999; McKool, 2007; Troyer et al., 2019). However, results regarding the relationship between student motivation and school-related reading are still scarce and inconclusive. This ambiguity, we argue, stems from research practices operationalizing motivation as extrinsic-intrinsic (e.g., Becker et al., 2010; Schaffner et al., 2013), using motivational constructs in isolation (thus neglecting reciprocal suppression, as pointed out by Schaffner et al. (2013)), using proximal (less reliable?) measures of students’ motivation for reading (e.g., teachers’ impressions of students’ emotions, De Naeghel et al., 2012) and/or imprecise measures of reading amount (e.g., responses ranging from “almost always” to “never,” with no account of the amount read at each occasion; e.g., De Naeghel et al., 2012). In contrast, our study used self-reported levels of students’ autonomous and controlled motivation, which are conceptually less overlapping than the constructs of extrinsic and intrinsic motivation and, we argue, more reliable than, for example, teachers’ inferences of students’ motivation from their verbal engagement or similar proximal indicators of
motivation. Moreover, the motivational constructs were analyzed jointly for their relationship with students’ appraisals of their recent amount of reading—thus increasing the predictive validity by reducing bias from memory and capitalizing on any reciprocal suppression effects. Thus, our study adds to the understanding of how students’ motivation, from a self-determination perspective, relates to their amount of reading in and for school. In contrast to studies of leisure-time reading (e.g., Guthrie et al., 1999; Schaffner & Schiefele, 2016), our results show that the relationship between students’ motivation, including students’ general attitudes toward reading and toward the subject, and the amount of school-related reading is weak. Even in the few cases where models were significant, they could not explain any substantial proportion of students’ amount of school-related reading.

A possible explanation for the lack of a strong relationship between students’ motivation and their amount of school-related reading could be that students’ reading behavior first and foremost is regulated by the teacher, corroborating the view of Guthrie and Cox (2001) that reading is a practice that is to a high extent shaped by teacher assignments and expectations on students. Not only does the teacher usually decide what to read, but also when, how, and for how long. As we assume that most students want to succeed in school, and hence try to follow the instructions from the teacher, we argue that there might not be much room for students’ more autonomous motivation to influence the amount of text read during a normal lesson. In this context, we acknowledge that teachers themselves do not have full autonomy in their teaching, as their instructional practice is heavily dominated by, for example, “mandated curricula, controlling performance pressures, grading requirements, and high-stakes tests” (Ryan & Deci, 2020). Hence, although many teachers value reading as a learning activity, they may still feel constrained by external factors that keep them from instructing the students to read to the extent the teachers want.

Reading as homework could arguably provide somewhat more scope for autonomous choices, at least in relation to decisions on when, for how long, and where to read. Some support for this hypothesis can be found in the distribution of the significant and near significant (i.e., $p < .05$ but larger than the Holm-Bonferroni corrected $p$) models over the type of texts and contexts of reading. If we can accept this relaxation of the control of the FWER, then the accumulation of “near significant models” for fiction reading including homework suggests a larger scope for influence of students’ motivation on the amount of reading. Thus, reading fiction as homework seems to resemble leisure-time reading in terms of the strength of relationship between motivation and reading amount, and hence the importance of autonomy in reading found in previous research (e.g., Becker et al., 2010; Schaffner & Schiefele, 2016).
Interestingly, and seemingly counter to our argumentation that in-school reading is regulated by the teacher and thus not influenced to any high extent by student motivation, Grade 6 students' motivation was correlated with their in-school fiction reading in Swedish (L1). This could, however, be explained by the fact that it is common for students to have a “bench book” (often fiction), that they read predominantly in Swedish (L1) class. Interviews (not reported here) with the students revealed that there was often no dedicated time for bench-book reading, but this reading took place as time allowed and at the discretion of the student, thus allowing students’ motivation to influence students’ amount of reading.

The fact that several of the models predicting fiction reading in Grade 6 were significant or near significant, while all the models predicting nonfiction reading were very far from significant, indicates that fiction reading in Grade 6 provides more scope for student autonomy and choice than nonfiction reading. However, the results do not give any information as to why this is the case. It is tempting to speculate that the difference in scope for autonomy could be due to differences in the purpose of reading, or in the character of the text. For example, in our experience, nonfiction reading is often focused on finding specific information (facts), and the texts are often well delimited and concise, which does not provide much scope for autonomy in reading. In contrast, the purpose of fiction reading is often to experience something and to construct, rather than extract, a meaning or message between and beyond the lines. Thus, this type of school-related reading would resemble leisure-time reading and provide more scope for autonomy than nonfiction reading does.

In Grade 9, the pattern of relationships between student motivation and reading amount differs from Grade 6 as the models with explanatory ability (also considering the near significant models) are more dispersed over both text type and reading context. Our data indicate that students in Grade 9 are less autonomously motivated than students in Grade 6 (e.g., Table 3). This could explain why the larger scope for autonomous choices when reading as homework does not seem to affect the relationship between students’ motivation and reading amount to the same extent in Grade 9 as in Grade 6. That is, even though it is possible for students to self-regulate their reading amount, they are not autonomously motivated enough to take advantage of this possibility. Instead, because their motivation is mainly instrumental (i.e., controlled), they limit their reading to what they are instructed to read.

To conclude, our results suggest that it is mainly the teachers’ instructional practices, rather than students’ motivation to read, that determine the amount of school-related reading. Hence, to find the explanation as
to why students do not read more at school, one need to look more closely at the scope and context for reading offered at school—including room for student autonomy, competence, and relatedness (Ryan & Deci, 2020)—rather than at the individual student and his or her given level of motivation.

The Relationship Between Students’ Motivation and Their Experiences of In-School Reading

As seen in Tables 6 and 8, the relationship between students’ motivational aspects (i.e., motivation type, subject attitude, and attitude toward reading) and their experiences of their subject-specific reading is strong, regardless the type of school-related text, grade, or the context of reading. Similar to the results of the meta-analysis by Petscher (2010), students’ attitude toward the subject was, in general, the strongest predictor, correlating positively with their experiences of the reading. Although it is reasonable to expect subject attitude to correlate positively with reading experiences in the same subject, it is not self-evident which way this relation goes. A positive attitude toward the subject could increase the probability of a positive reading experience, but it is also possible that positive reading experiences contribute to a positive overall evaluation of the subject (i.e., subject attitude).

In Grade 6, subject attitudes, autonomous motivation, and general reading attitudes showed positive relations to students’ experiences of their reading. Hence, the students seem to perceive the reading as positive because their reading is primarily intrinsically regulated; they read for autonomous reasons and they like reading and the subject. The pattern in Grade 9 was similar, but in addition there was also a positive association between students’ level of controlled motivation and their experiences of the reading. This correlation might seem to contrast with much of the motivation literature that proposes that controlled motivation is associated with mainly negative emotions (Ryan & Deci, 2000, 2020). A closer look at our controlled motivation construct revealed that the item with the strongest loading was “I read because I’m expected to do it.” Given the fact that controlled motivation had the same positive relationship with reading experience as autonomous motivation and attitudes toward the subject and toward reading, we argue that controlled motivation in our case may have had a positive connotation for many students. For example, the reason for them to engage in reading may have been that they want to feel the satisfaction of measuring up to the expectations of the teacher, rather than to avoid negative consequences like guilt, threats, or shame. Hence, it seems that teachers’ expectations that students do what they are instructed to do, that is, controlling
students’ reading behavior, do not preclude students from having positive experiences from the reading. This is an encouraging thought, because positive emotions are not only associated with improved memory functioning and creativity (Fredrickson & Branigan, 2005), but also with the development of future positive attitudes toward the object that caused the emotion, that is, in our case, reading (Maio, Haddock, & Verplanken, 2018; Olson & Kendrick, 2012; Vogel & Wanke, 2016). Moreover, repeated positive experiences of reading may also lead to students beginning to expect these emotions in adjunction to future reading. Hence, experiencing positive emotions may become a goal for the students, that is, they can become more intrinsically (i.e., autonomously) motivated for reading. Thus, providing scope for student autonomy in school-related reading practices, but also formally instructing students to read to a higher extent, seem to be a feasible way to foster positive attitudes and autonomous motivation for reading, and thus both directly and indirectly increase the amount of reading.

**Educational Implications**

As stated above, a significant proportion of students’ amount of reading seems to be in the hands of the teacher. Moreover, students generally perceive their in-school reading as positive and do show motivation to read, even though their motivation seems to become more extrinsic as they move on to secondary school. Hence, primary actions to increase students’ amount of reading would be to assign reading tasks that cater both to students’ intrinsic and extrinsic motivation—as most intentional behaviors are multiply motivated (Ryan & Deci, 2020)—and to dedicate more time to reading across the curriculum, combined with high expectations of teachers on the students. Our data suggest that an increased amount of reading will be received well by most students, especially when they, in line with SDT, experience that their needs for competence and relatedness are fulfilled by the classroom environment in which the reading takes place. Increasing the time allocated for reading also has the potential to open up for more student autonomy in reading, thus generating even more positive experiences of the reading.

**Limitations and Future Research**

As to the measure of reading amount, despite the instructions provided by the teacher and in the questionnaire itself, there was room for interpretation in terms of what constitutes continuous text and how the number of pages should be summed up. We cannot estimate in what direction this ambiguity may have influenced our results but assume that
the errors are at random, which in combination with a fairly large sample would render results that are reliable. Although a more objective and unambiguous measure would have been preferred, this tradeoff between precision and sample size is difficult to circumvent. Still, choosing between students’ own reports and teachers’ estimates of the number of pages read, we believe the former is more accurate as it accounts for variation between students.

As the data did not allow multi-level analyses, the significance of the relations between constructs may have been overestimated. Hence, the relationship between students’ motivation and amount of reading may be even weaker than reported here. This would strengthen rather than reduce the validity of our conclusions about the effect of student motivation on reading amount, as this result would point in the same direction as the present results, but even more emphasized. However, the strong relationship between students’ motivation and their experiences of their reading shown in our study might have been weaker in case a multilevel analysis would have been possible, and if there were indeed a class-level effect.

The positive relationship between students’ controlled motivation and their reading experiences is intriguing. Our suggestion, that the construct of controlled motivation would merely reflect a limitation in scope for students to decide when and how much to read, rather than the existence of an external pressure that makes them read, is speculative. To investigate this matter in more depth, studies using interviews or large-scale surveys that differentiate between the various reasons an individual can have for holding a certain type of motivation are needed.

Availability of data and material

Research data are not shared.

Conflicts of interest/Competing interests

We have no known of conflicts of interest to disclose.

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Data Availability Statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data are not available.

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Appendix 1. Questionnaire items

As the questionnaire was delivered digitally, with several of the questions in the format of complex “matrix questions,” it does not reproduce well in the word-form. For these items, we have therefore only stated their stem and indicated to which contexts the respective item applied.

Initial “plain” items:

Q1 – What is the name of your school?
Q2 – What school year are you in?
Q3 – Which class are you in?
Q4 – What gender are you?
Q5 – What year were you born?
Q6 – Are you in a class with mixed ages?
Q7 – How many teachers have you had today?
Q8 – In general, what do you think of reading FICTIONAL texts that are NOT part of your schoolwork? (Very bad, Pretty bad, Neither bad nor good, Pretty good, and Very good)
Q9 – In general, what do you think of reading NONFICTIONAL texts that are NOT part of your school work? (Very bad, Pretty bad, Neither bad nor good, Pretty good, and Very good)

Matrix items:

Q10 – (a) Which school subjects have you had today?
(b) [for each subject] How long was the lesson? (number of minutes)
(c) [for each subject] What I think of the subject (Very bad, Pretty bad, Neither bad nor good, Pretty good, and Very good).

The four matrix items below were repeated for each subject they had the day of the inquiry and for in-class reading and reading as homework.
Q11–Q12 – [For each subject] How many pages continuous NONFICTION TEXT have you read [during CLASS (Q11) /as HOMEWORK for (Q12)] today?
Q13–Q14 – [For each subject] How many pages of FICTION TEXT have you read [DURING CLASS (Q13)/as HOMEWORK for (Q14)] today?

For each of the items Q 11–Q14, students indicated:

(a) Total number of pages
(b) Number of pages in Swedish
(c) Number of pages in English
(d) Number of pages in another language (indicate which language)

**Final “plain” items**

(Response options: Fully agree; Mostly agree; Mostly disagree; Fully disagree)

Q15 – Why do you read during class?
...because I don't want the teacher to be disappointed with me
...because I want the teacher to think that I am a good student
...because I want to learn new things
...because I will feel ashamed if I don't
...because It's fun
...because I'm expected to do so
...because I like it
...because It's important to me
...because It's exciting

Q16 – Why do you read texts related to schoolwork at home?
...because I don't want the teacher to be disappointed with me
...because I want the teacher to think that I am a good student
...because I want to learn new things
...because I will feel ashamed if I don't
...because It's fun
...because I'm expected to do so
...because I like it
...because It's important to me
...because It's exciting