



Reading amount as a mediator between intrinsic reading motivation and reading comprehension in the early elementary grades



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ABSTRACT

Previous research suggests that children's growth in reading abilities is positively related to their intrinsic reading motivation and the amount of spare time reading. Furthermore, a number of previous studies point to the possibility that spare time reading amount mediates the positive association between intrinsic reading motivation and reading comprehension. However, to date, most of the available evidence for a mediation model is either cross-sectional and/or limited to late elementary and secondary school students, whereas the early elementary grades have only rarely been targeted in longitudinal studies. Accordingly, the present study investigated longitudinal relations between intrinsic reading motivation, reading amount, and reading comprehension in the early elementary grades with a particular focus on the potential mediator role of reading amount. Evidence was found for partial mediation by reading amount between reading comprehension and later intrinsic reading motivation. However, there was no evidence for (partial or full) mediation by reading amount between intrinsic reading motivation and later reading comprehension. It is concluded that in the process of becoming more sophisticated readers, early elementary students read more frequently in their spare time, and this makes reading more rewarding for them in the long run. In contrast, the potentially positive effect of spare time reading on later reading comprehension seems to be either non-existent or too weak to be reliably detected over longer time frames.

1. Introduction

Text is a ubiquitous medium in present-day societies all over the world. It is used for personal communication, manuals, poetry, and the dissemination of scientific results, to name a few. Particularly relevant here, text also plays an important role as being one of the most widely-used media for instruction and knowledge acquisition in a variety of academic subjects. Given the importance of text throughout one's academic and personal life, it is thus no surprise that educators make the development of students' reading comprehension one of the primary goals in elementary school. In fact, there are also empirical grounds to focus on the development of reading comprehension in early school life. Students' reading comprehension is strongly associated with performance in other academic subjects (Kirsch et al., 2002). Furthermore, initially weak readers tend to exhibit slower growth of their reading comprehension compared to initially strong readers, with potentially grave consequences for academic development (e.g., Bast & Reitsma, 1998; Cunningham & Stanovich, 1997). In order to deal with these issues and support educators in their task of developing students' reading skills, it is thus imperative to understand in detail the processes through

which elementary students become more and more sophisticated readers.

Whereas previous research on the development of reading comprehension in children has almost exclusively focused on the late elementary and early secondary school years (cf. Schiefele, Schaffner, Möller, & Wigfield, 2012), the present study aimed at advancing our understanding of elementary students' reading comprehension by studying the relation between two key determinants of early reading growth, namely, *reading motivation* and *reading amount*. Reading motivation refers to the various incentives which make an individual engage in reading (Becker, McElvany, & Kortenbruck, 2010; Guthrie, Wigfield, Metsala, & Cox, 1999; Retelsdorf, Köller, & Möller, 2011; Unrau & Schlackman, 2006). In accordance with the general literature on motivation, some of these incentives may be *intrinsic* to a task, whereas others may be *extrinsic* (Schiefele et al., 2012). Simply put, intrinsically motivated individuals read because they find the process of reading rewarding in itself, whereas extrinsically motivated individuals read in order to achieve goals that are unrelated to the actual process of reading such as grades, money, or praise from others. The study of intrinsic (rather than extrinsic) reading motivation is particularly

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interesting with regard to the development of reading comprehension, because the positive association between these two variables is robust and emerges already in the elementary grades (Becker et al., 2010; McElvany, Kortenbruck, & Becker, 2008; Law, 2008; Retelsdorf et al., 2011; Schiefele, Stutz, & Schaffner, 2016; Stutz, Schiefele, & Schaffner, 2016; Taboada, Tonks, Wigfield, & Guthrie, 2009; Unrau & Schlackman, 2006; Wang & Guthrie, 2004).

Regarding the causal direction between intrinsic reading motivation and reading comprehension, several studies have found that students' level of intrinsic reading motivation predicts their later level of reading comprehension (e.g., Retelsdorf et al., 2011; Taboada et al., 2009; Wang & Guthrie, 2004). Apart from replicating this result, Schiefele et al. (2016) observed that reading comprehension at one measurement occasion predicted involvement (a component of intrinsic reading motivation) at a second measurement occasion one year later. In other words, their study suggests that the positive association between intrinsic reading motivation and reading comprehension might in fact be causally reciprocal.

One possible explanation for why intrinsically motivated students readers become better readers over a given time period is that they tend to read more in their spare time and thereby actively practice the skills necessary for becoming competent readers. Indeed, several studies have confirmed positive associations between intrinsic reading motivation and reading amount (e.g., Becker et al., 2010; Durik, Vida, & Eccles, 2006; Guthrie et al., 1999; Lau, 2009; McElvany et al., 2008; Stutz et al., 2016; Wang & Guthrie, 2004) as well as between reading amount and reading comprehension (e.g., Anderson, Wilson, & Fielding, 1988; Cipielewski & Stanovich, 1992; Cunningham & Stanovich, 1997). However, support for a mediation model, that is, a model in which the positive relation between intrinsic reading motivation and reading comprehension is (partially) explained via reading amount, is surprisingly scarce. Being one of the few exceptions, a study by McElvany et al. (2008) found that the effect of intrinsic reading motivation in third grade on reading comprehension in sixth grade was partially mediated through fourth-grade reading amount. On the other hand, referring to the same data set, Becker et al. (2010) observed that the significant mediation effect of fourth-grade intrinsic reading motivation on sixth-grade reading comprehension via fourth-grade reading amount disappeared when fourth-grade reading comprehension was added as control variable. A possible interpretation of this result is that intrinsic reading motivation does not exert unique effects on reading amount and comprehension when controlling for inter-individual differences in reading comprehension.

As regards cross-sectional evidence, Wang and Guthrie (2004) observed significant associations of intrinsic reading motivation with both reading amount and reading comprehension. However, the association between reading amount and reading comprehension was non-significant in their model and, thus, no evidence could be provided for a potential mediator role of reading amount. More recently, Stutz et al., 2016 did find a significant indirect effect of intrinsic reading motivation on reading comprehension via reading amount in a large sample of second- and third-grade elementary students. However, as normally the case with the cross-sectional evidence, conclusions regarding the causality between the variables intrinsic reading motivation, reading amount, and reading comprehension are limited.

Pertaining to the potentially reciprocal relation between reading comprehension and intrinsic reading motivation found by Schiefele et al. (2016), one should not only consider a mediating effect of reading amount for the path from intrinsic reading motivation to later reading comprehension, but also for the path from reading comprehension to later intrinsic reading motivation. This prediction seems reasonable, given that during the process of becoming a more sophisticated reader, one will be able to read an increasingly wider spectrum of the literature. This, in turn, should lead to more opportunities for reading, and thereby – on average – to more frequent reading. Furthermore, it seems likely that more frequent reading in the spare time will make

elementary students feel more confident and comfortable with reading, and this should make reading more rewarding, as well (cf. Chapman, Tunmer, & Prochnow, 2000). However, to our best knowledge, this converse mediator pathway has not been directly tested so far within a longitudinal study and with elementary students.

2. The current study

In sum, while there is suggestive evidence for the role of reading amount as a mediator in the relation between intrinsic reading motivation and reading comprehension, this mediator effect is far from being firmly established, at least with regard to the elementary grades. Furthermore, the converse mediator effect – reading amount mediating the effect of reading comprehension on intrinsic reading motivation – is yet to be tested within a longitudinal design. An examination of these two mediator pathways is particularly needed for the early elementary grades because of the emerging separation between strong and weak readers in these grades.

To build a convincing case for a mediation model in the early elementary grades, we measured students' reading comprehension on word-, sentence-, and text levels as well as intrinsic reading motivation in a sample of second- and third-graders at two points of time lying *two years* apart. Furthermore, students' reading amount was measured two years *after* the first and one year *before* the second measurement of reading comprehension and intrinsic reading motivation. To highlight the temporal order of these measurements, the first and second measurement of reading comprehension and intrinsic reading motivation will be labeled T1 and T3, while the measurement of reading amount will be labeled T2 in the following.

Based on the above reasoning regarding the potential mediator role of reading amount, we investigated the hypothesis that intrinsic reading motivation at T1 would significantly predict reading comprehension at T3 both directly and indirectly via reading amount at T2. Likewise, we investigated the relation from reading comprehension at T1 to intrinsic reading motivation at T3 both directly and indirectly through reading amount at T2. To this end, we set up structural equation models and estimated these models with the data from the three measurement occasions, as described in detail in the following sections.

3. Method

3.1. Participants and procedure

The present study was part of large cross-disciplinary research project which aimed at studying factors contributing to developmental advantages and disadvantages during childhood and adolescence from a longitudinal perspective.¹ The full participant sample at T1 consisted of 1075 children (Grade 2: $n = 549$, $M = 8.22$, $SD = 0.49$, 52.5% girls; Grade 3: $n = 526$, $M = 9.13$, $SD = 0.49$, 52.1% girls) drawn from 32 public elementary schools (125 classes) and represented rural and urban areas of different socioeconomic backgrounds. All students in our sample attended a six-year elementary school over the whole course of the study. Slightly more than half of the sample completed all three measurements leaving us with the data of 565 students (Grade 2: $n = 482$, M at T1 = 8.20, SD at T1 = 0.49, proportion girls = 53.7%; Grade 3: $n = 83$, M at T1 = 8.78, SD at T1 = 0.55, proportion girls = 57.8%). Because this filtering procedure sharply reduced the original sample size and, led to a disproportionate dropout of grade 3

¹ Note that parts of the current data from the first measurement occasion have already been used in two previous studies ([Author, Year] and [Author, Year]). However, these previous studies were not concerned with longitudinal mediation and did not include data points from the second and third measurement occasion analyzed here. Thus, the current study represents an entirely novel contribution speaking to the issue of longitudinal relations between reading amount, intrinsic reading motivation and reading comprehension.

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