

SELF-EFFICACY AS A PREDICTOR OF READING INSTRUCTION: A COMPARISON BETWEEN NORWEGIAN AND SWEDISH TEACHERS

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Abstract

This study departs from socio-cognitive theory to describe differences in Swedish and Norwegian teachers' attitudes towards reading instruction. The overall aim of the study is to describe how Swedish (n = 340) and Norwegian teachers' (n = 236) self-efficacy for motivating their pupils and adapting their reading instruction vary with their attitudes towards reading instruction—more particularly: reading aloud, conducting text talk in whole class, or conducting teacher-guided text talk in small groups. The study reports a structural equation model using diagonally weighted least squares. We tested that the scales had the same meaning in both countries (invariance analysis) to ensure that the scale was comparable across countries. The results suggest that when compared to Norwegian teachers, the sampled Swedish teachers reported more positive attitudes towards reading instruction and higher self-efficacy for reading instruction. Specifically, reading self-efficacy for reading motivation was substantively higher in the latent (probit) means. In addition, self-efficacy for reading instruction positively predicted higher propensity for positive attitudes towards reading instruction. The study also reports measures for individual reading attitudes (reading aloud, conducting text talk in whole class, or conducting teacher-guided text talk in small groups).

Keywords: comparative study, Scandinavia, teacher self-efficacy, reading motivation, reading adaptation

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1. INTRODUCTION

Most researchers would agree that reading comprehension matters for pupils' language development (Pulido, 2007). However, researchers disagree on why teachers vary in their attitudes towards reading instruction. Although many teachers consider reading instruction in their teaching important, not all do (Hall, 2005; Shanahan & Shanahan, 2008; Brozo, Moorman, Meyer & Stewart, 2013). A growing number of scholars and policymakers in Norway and Sweden have forcefully argued that reading instruction is an obligation for all teachers—regardless of their subjects—to promote reading comprehension (Kunnskapsdepartementet, 2006; Westlund, 2013). However, in our study we draw attention to the puzzle as to why teachers vary in their attitudes towards reading instruction. Although attitudes towards reading instruction may not account for teachers' actual behaviour in the classroom, attitudes indicate teachers' willingness or propensity to work with reading instruction (Ajzen & Fishbein, 2000).

A probable predictor of whether teachers will adopt positive attitudes towards reading instruction is teachers' self-efficacy (Zee & Koomen, 2016). The term *self-efficacy* was coined by Bandura (1986). Teachers' *self-efficacy beliefs* refers to their judgment of their capability to bring about desired outcomes in pupil engagement and learning, even with difficult or unmotivated pupils (Bandura, 1986; Tschannen-Moran & Hoy, 2007).

In a cross-national study, Vieluf, Kunter, and van de Vijver (2013) suggest that teachers' general self-efficacy varies by country (i.e., individualistic–collectivistic). Nevertheless, Vieluf et al. consider general self-efficacy rather than self-efficacy for reading instruction (e.g., the capacity to motivate pupils or adapt reading instruction). In a previous study, Swedish teachers reported a higher level of self-efficacy than Norwegian teachers (Andreassen & Reichenberg, 2018). However, Andreassen and Reichenberg (2018) did not consider the second part of Vieluf et al.'s claim, which was namely that the strength of the correlation between self-efficacy and other variables (attitudes and behaviours) differs depending on country. Body (first para after heading, after figure, after table etc.

In the current study, we consider the second part of Vieluf et al.'s claim. We compare Sweden and Norway with regards to how self-efficacy for reading instruction varies with attitudes towards reading instruction. Teachers' attitudes towards reading instruction matter because we can learn about teachers' willingness to read aloud and conduct text talk in the classroom.

Although reading instruction has several dimensions, the scope of our article focuses on teachers reading aloud to pupils and conducting text talk in class or in teacher-guided small groups. Furthermore, there are several studies of different forms of text talk (Palincsar & Brown, 1984; Beck & McKeown, 2006). Nevertheless, we have limited knowledge of the extent to which teachers endorse text talk and reading aloud in the classroom.

First, we expect that teachers' degrees of self-efficacy for reading instruction positively predict their attitudes towards reading instruction. Second, we expect these differences to be greater in Sweden than Norway. We will develop this further in the section on theoretical expectations.

1.1 Aim

The overall aim of our study is to describe how Swedish and Norwegian teachers' self-efficacy for motivating their pupils and adapting their reading instruction vary with their attitudes towards reading instruction. In our study, we are interested in the following dimension of reading instruction underlying the latent variables: teachers reading aloud to their pupils, conducting text talk in class, or conducting text talk in teacher-guided small groups. Our research questions were as follow:

- 1) To what extent do Swedish and Norwegian teachers differ regarding their latent attitudes towards reading instruction, latent self-efficacy in reading motivation, and adapted reading instruction?
- 2) To what extent does Swedish and Norwegian teachers' self-efficacy for reading motivation and reading adaptation predict attitudes towards reading instruction?
- 3) To what extent do Swedish and Norwegian teachers differ regarding their propensity to read aloud to their pupils, conduct text talk in class, and conduct teacher-guided text talk in small groups?

We structured the remainder of our paper as follows: First, we discuss the current state of research and theories about teachers reading aloud and conducting structured text talk as well as teachers' attitudes towards reading instruction. Second, we discuss the concept of self-efficacy, the data, and measurements used in the present study. Third, we present the results of the study, followed by a discussion of the findings and the conclusions.

1.2 Teachers' reading instruction

Teachers' reading aloud and conducting text talk with the whole class or in teacher-guided small groups are structured reading activities. Nevertheless, reading aloud differs from text talk in class and small groups since reading aloud does not necessitate a conversation.

Teachers reading aloud to pupils has been recommended for decades (van Kleeck, Stahl, & Bauer, 2003; Lane & Wright, 2007). Teachers can influence reluctant readers through persistent modelling. Consequently, the more pupils see teachers reading, the more they want to try it themselves (Loh, 2009).

During the past thirty years, researchers have demonstrated the role of social interaction and teacher instruction in developing pupils' reading abilities (Nystrand, 2006; Alexander, 2006; Mercer & Howe, 2012; McKeown & Beck, 2003; Beck & McKeown, 2006).

This teacher instruction has taken several forms, for instance structured talk about texts in class or in small groups. Structured talk about texts will (a) support pupils' understanding of difficult texts, (b) develop pupils' ability to read between and beyond the lines (Palincsar & Brown, 1984; Beck, McKeown, & Kucan, 2002; Beck & McKeown, 2006), (c) develop pupils' vocabulary (Cunningham, 2005), and (d) make pupils use language to reason and work collaboratively (Nystrand, 2006; Alexander, 2006; Mercer & Howe, 2012; Beck & McKeown, 2006).

One form of structured text talk in class is *Concept-Oriented Reading Instruction*, which is an approach to teaching reading, writing, and science in the classroom. One of the purposes is that pupils shall develop conceptual knowledge in science (Guthrie et al., 1996). Forms of structured text talk in small groups are: *Instructional conversations*, (Goldenberg, 1992), *Reciprocal teaching* (Palincsar & Brown, 1984), and *Questioning the Author* (Beck & McKeown, 2006).

Central in *Instructional conversations* is the promotion of more complex language and expressions. The teacher elicits more extended pupil answers by using a variety of elicitation techniques: invitations to expand (e.g., "tell me more about that"), questions (e.g., "What do you mean?"), restatements (e.g., "in other words"), and pauses (Goldenberg, 1992).

Reciprocal teaching was developed for struggling readers and refers to an instructional activity that takes place in the form of a dialogue between teacher and pupils regarding segments of text (Palincsar & Brown, 1984). The teacher and pupils take turns assuming the role of teacher in leading this dialogue. The dialogue is structured by the use of segmentation and four strategies: prediction, generating questions, clarification, and summarization.

In *Questioning the Author*, the text is viewed as the product of a human author who is potentially fallible. Armed with this view, pupils can view texts as less impersonal, authoritative, and incomprehensible. They realize that a text is open-ended and incomplete and that as readers they have to contribute something to complete it, for instance by asking the author hypothetical questions. The text is read online and the teachers have segmented the text in advance. The segmentation has been done where the teacher expects the pupils to meet difficulties. The text talk is structured by the use of segmentation and six discussion moves: marking, turning back, revoicing, modelling, annotating, and recapping (Beck & McKeown, 2006).

In sum, our review has shown that reading instruction clearly intersects with language instruction. Although reading and language instruction are not always the same, the two forms of instruction clearly overlap. Reading instruction fosters language development (Mercer & Howe, 2012).

1.3 Attitudes towards reading instruction

Our study focuses on attitudes. Attitudes help us understand and explain people's behaviours. In agreement with psychologists, we define attitudes as our likes/dislikes towards something, (e.g., of reading and writing; Bizer, Barden & Petty, 2003, 247). Our attitudes can be measured from negative to positive. Whether teachers' hold positive/negative attitudes matters to instruction. Teachers' attitudes predict behavioural intentions in science and inclusive instruction (Sharma & Sokal, 2014; Czerniak & Lumpe, 1996). Because attitudes indicate teaching behaviours, teachers' attitudes towards reading instruction should also indicate teachers' reading instruction behaviours. In turn, reading instruction behaviours promote language-centred reading instruction programmes described above. Holding positive attitudes towards elements in reading instruction promotes teachers' reading instruction behaviours (e.g., teachers reading aloud to pupils and conducting text talk in class or in teacher-guided small groups). Consequently, attitudes towards such instruction indirectly promote pupils' reading and language development. We believe that teachers' attitudes towards reading instruction in part comes from their level of reading instruction self-efficacy. In the next section we will develop this concept further.

1.4 Self-efficacy

We will first describe self-efficacy in general; then we will address teachers' self-efficacy for motivating their pupils and adapting their reading instruction. Finally, we will describe self-efficacy across countries. Self-efficacy is one of the key components of socio-cognitive theory (Bandura, 1986). In brief, socio-cognitive theory suggests that people learn from observing others' interactions and from previous experience. According to this theory, people with high self-efficacy are most likely to put their knowledge to use. Self-efficacy is not a reflection of an individual's actual skills but rather their perception of what they can accomplish with the skills they possess. Following Bandura (1986), self-efficacy beliefs stem from multiple sources, but prior experiences with given tasks provide the most reliable source of information regarding self-efficacy beliefs. Success strengthens self-efficacy, while repeated failures undermine it (Bandura, 1986). Self-efficacy beliefs can also be based on others' similar performances of given tasks. Verbal persuasion may also promote a positive perception of potential achievement. Consequently, encouragement from other people—including colleagues—also increases self-efficacy. Moreover, an individual's psychological and affective state (i.e., their level of happiness) can increase their perception of self-efficacy, whereas stress may have a negative effect on an individual's perceived capability. Stress can cue individuals to doubt their capability to succeed: a stressed individual's negative thoughts and fears regarding their capabilities can decrease self-efficacy and trigger even more stress (Shunk & DiBenedetto, 2015). In sum, the theory of self-efficacy promotes the belief that human beings can shape their own actions.

1.5 Teacher self-efficacy

Based on Bandura's (1986) conceptualization of self-efficacy beliefs, Skaalvik and Skaalvik (2007) defined teacher self-efficacy as "individual teachers' beliefs about their own abilities to plan, organize, and carry out activities required to attain given educational goals." Teachers' self-efficacy beliefs predict their reading instruction in the classroom in several ways. Self-efficacy affects the effort teachers invest in their work, and it influences their persistence in the face of setbacks. Self-efficacy beliefs can influence a teacher's choices, effort, and persistence under difficult conditions (Avanzi et al., 2013; Klassen & Chiu, 2010; Zee & Koomen, 2016; Pajares, 1997). Skaalvik and Skaalvik (2011) divide teacher self-efficacy into six aspects that incorporate all the tasks teachers are expected to do: (1) explain and instruct, (2) adapt instruction to individual pupils' needs, (3) motivate the pupils, (4) maintain discipline and order, (5) cooperate with parents and other teachers, and (6) cope with changes. According to Skaalvik and Skaalvik (2011), in the context of strategies for teaching reading, self-efficacy refers to a teacher's capability to perform a certain task.

1.6 Teachers' self-efficacy beliefs in motivating pupils and adapting reading instruction to individual needs

Based on Skaalvik and Skaalvik's (2011) operationalization of teacher self-efficacy in six aspects, we find aspect Number 2 and Number 3 especially relevant in our understanding of teachers' reading instruction self-efficacy as the extent of teachers' beliefs that they are capable of encouraging even struggling and reluctant readers to read. Teachers with high reading instruction self-efficacy thus believe in their capability to motivate pupils and adapt their teaching to individual pupils' needs. Teachers with low reading self-efficacy, on the other hand, believe that they are not able to engage pupils with reading and writing difficulties or disabilities with their reading instruction (Soodak & Podell, 1993; Tschannen-Moran & Hoy, 2007). However, this raises the question of how to measure teacher self-efficacy.

1.7 Self-efficacy across countries: Theoretical expectations

In this section we outline our hypothesis (H) derived from previous research (Vieluf et al., 2013) and theory (Bandura, 1986; Hofstede, 2001; Triandis, 2018). A key concern in socio-cognitive theory has been to what extent self-efficacy has the same meaning across countries. Bandura's view that self-efficacy is universal has been challenged (Bandura, 1997). However, general teacher self-efficacy has been put to the test and clearly passed (Vieluf et al., 2013). Yet, researchers have argued that while teacher self-efficacy has the same meaning to teachers, we should nevertheless expect differences in the (latent) averages of self-efficacy across countries. Evidence suggests that general teacher self-efficacy varies with the degree of collectiv-

ism and individualism of countries (Hofstede, 2001; Triandis, 2018). Highly collectivistic countries have lower averages of self-efficacy (e.g., South Korea or Estonia), whereas individualistic countries (e.g., Norway or Denmark) have higher averages. Nevertheless, even Norway and Denmark differ in self-efficacy levels, suggesting that even rather similar countries can diverge. We do not have numbers for Sweden. However, Sweden has long been pinpointed as one of the most individualist countries (Hofstede, 1980; Triandis, 2018). Furthermore, we do not know how self-efficacy for reading motivation and reading adaptation differ across countries.

Given previous research and theory, we expect that Swedish and Norwegian teachers can be thought of as similar populations. However, we first expect that teachers will differ between countries in their levels of attitudes towards reading instruction and self-efficacy (H1). We justify the expectation based on the argument that countries, even though being similar, have rather different national cultures due to levels of individualism, as previous research predicts (Vieluf et al., 2013). However, deriving a direction is difficult. We might consider a greater level of self-efficacy in Sweden compared to Norway as Swedish teachers have tended to report higher levels of self-efficacy in previous research (Andreassen & Reichenberg, 2018).

Second, we expect that self-efficacy for reading motivation should matter more for teachers' attitudes towards reading instruction in Sweden than in Norway. Given the pivotal importance of reading motivation in previous studies (Guthrie et al., 2007), we suspect that all teachers who believe that they can motivate their pupils have stronger positive attitudes about what is doable in reading instruction (H2). Again, previous research suggests that levels of individualism (Hofstede, 2001; Triandis, 2018) should vary with the levels of relationship between self-efficacy for reading and attitudes towards reading instruction (Vieluf et al., 2013).

Third, we expect that self-efficacy in general should matter positively for all types of attitudes towards reading instruction (i.e., reading aloud and conducting text talk in class and in small groups).

2. METHOD

Context and participants. We will compare teachers in Norway and Sweden. Both countries have modern comprehensive schools with large secondary and tertiary sectors. Furthermore, in both countries, national initiatives have been launched to strengthen young people's literacy in reading and writing.¹

Data. Data were collected from two geographical areas, one in south-eastern Norway and one in western Sweden, using the same strategy and sampling frame

¹ *The Norwegian Directorate for Education and Training (2015)*, retrieved from <https://www.udir.no/in-english/>; *Läsluftet- Literacy boost (2017)*, retrieved from: <http://www.eli-net.eu/good-practice/examples-of-good-practice/detail/project/laeslyftet-literacy-boost>.

(teachers in Grades 0-9) to ensure comparability. The two areas share several characteristics, such as having a high proportion of industrial workers and a multi-ethnic but socially segregated society, which means that the pupil populations are very diverse (Tunström & Wang, 2019).

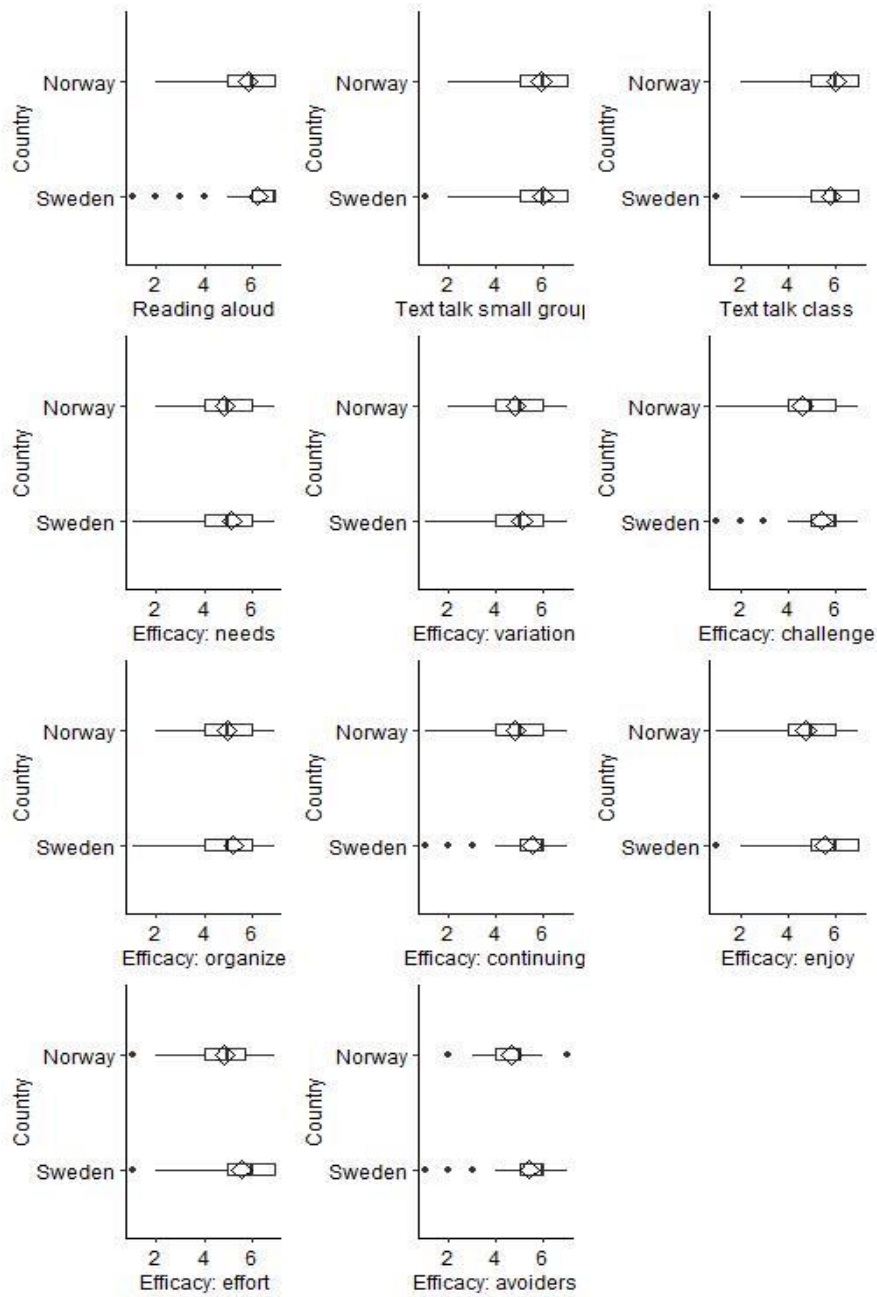
The sample consisted of 236 Norwegian teachers in ten small-to-medium-sized schools and 340 Swedish teachers in 14 medium-to-large schools. The teachers were recruited through a respondent-driven sampling strategy (nonrandom), and student teachers were asked to mediate contact with their schools.

Teachers were surveyed across subject areas. Letters containing information about the study were sent to the principals of each school. The researchers administered the questionnaires to the participants during the teachers' weekly team training meetings. Each researcher first introduced the study, explaining the purpose of the questionnaire. The researchers were also present while the teachers filled out the questionnaires, so the teachers could ask questions. Participation was voluntary, and all data were treated anonymously and confidentially.

Variables. The current paper examines teachers' (a) attitudes towards reading instruction and (b) self-efficacy beliefs. The participants were asked to respond to statements using a 7-point Likert scale. Possible answers ranged from 1 (*not at all true for me*) to 7 (*completely true for me*). The following statements about teachers' attitudes towards reading instruction were analysed (see Figure 1): (1) "I think it is important that the teacher read aloud to the pupils every day," (2) "I think it is important to talk about texts we read in the whole class," and (3) "I think it is important to conduct text talk in teacher-guided small groups". Eight statements regarding self-efficacy were also selected: (1) "I adapt my instruction to every pupil's needs", (2) "I make use of variation in the pupils' abilities so that all pupils are sufficiently challenged", (3) "I adapt my teaching so that not only poor readers but also good readers are challenged", (4) "I organize my instruction so that poor readers and good readers have graded tasks", (5) "I encourage all pupils not to give up on reading and writing tasks", (6) "I encourage poor readers to enjoy reading", (7) "I make all pupils do their best even when dealing with difficult texts", and (8) "I motivate pupils who actively avoid reading to read". Teachers' agreement with these statements indicate confidence in their capabilities to overcome factors that could create obstacles to pupils' learning.

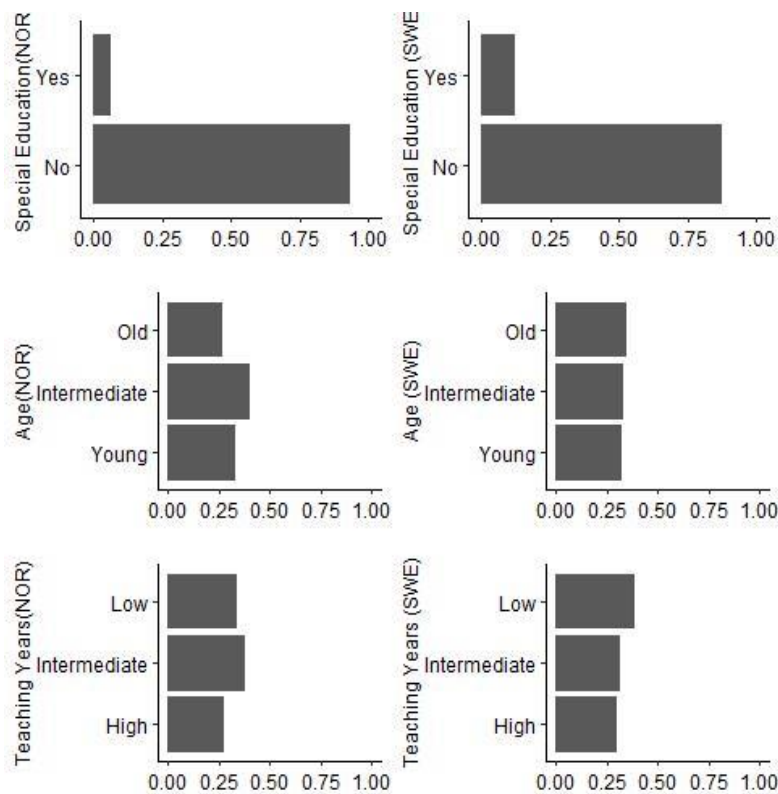
In our survey, we also asked questions about teachers' backgrounds: sex, years of teaching practice, age, education, and special education degree (see Figure 2). Within the educational policy documents in Sweden and Norway it is explicitly stated that one of the obligations of special educators is to teach reading to struggling readers. Moreover, special educators often have opportunities to teach in small groups, thus making our sample design reasonable given the purpose of our study. We report the descriptive statistics in the next section.

Figure 1. Boxplots, including means for reading aloud, text talk in class, teacher-guided text talk in small groups and efficacy by country. See running texts for details.



Descriptive statistics. Figure 1 shows the boxplots and means (flipped squares “◊”) by country for the reading and efficacy variables. Since the variables were measured on an ordinal scale (1 to 7), the median may be more representative than the mean. Norwegian and Swedish teachers in the sample tend to read aloud to their pupils regularly, but Swedish teachers have a higher mean and median for reading aloud to classes than Norwegian teachers. However, country differences in talk about texts read in class or in teacher-guided small groups seem negligible. As reported in previous studies, Swedish teachers report, on average, higher self-efficacy on all variables than Norwegian teachers (Andreassen & Reichenberg, 2018). However, we will later explore the difference in latent means—not directly observable—which has not been reported previously. Moreover, we will acknowledge the fact that the teachers did not use the full range of the scale, in particular the lower part.

Figure 2. Proportions for age, special education, and teaching years by country. Swe (Sweden), Nor (Norway). For age: young: 20-39, intermediate = 40-51, old = 52-68. Experience: Low:0-10, Intermediate: 11-20, High: 21-above



A few teachers had special education degrees (see Figure 2). Teachers' years of experience were dummy coded into three classes: 0 to 10 years, 11 to 20 years, and 21 years or more. Age was coded into three classes: 20 to 39, 40 to 51, and 52 to 68. However, these variables were only important as useful descriptors of the sample. Including these variables only deteriorated the fit of the models; therefore, we did not include them in our models.

Data analysis and scaling. We conducted the data analysis in R. Since our outcome variables are ordinal, a linear regression would not be appropriate for the data (Agresti, 2015).

In the first step of scaling, we conducted an exploratory factor analysis (EFA) using principal axis factoring. The EFA accounts for skewness and small samples but does not treat the variables as ordinal, thus we also conducted an EFA with the polychoric correlation using two-step estimation. The EFA indicated that the variables loaded as expected in agreement with previous work (Andreassen & Reichenberg, 2018; Skaalvik & Skaalvik, 2010). However, attitudes towards reading instruction showed some issues with cross-loading for teachers reading aloud. In addition, the loading coefficient was rather small (0.289). Nevertheless, cross-loadings is an issue in EFA (see Appendix, Table 1). In the case of confirmatory factor analysis (CFA), we set all cross-loadings to zero and have standard errors to adjust for goodness of fit.

In the second step of scaling, we also conducted a CFA using diagonally weighted least squares with the lavaan-package (Rosseel, 2012). The equivalent in Mplus is "WLSMV".

We motivate our categorical CFA as follows (Li, 2016). First, the loading coefficients of the measurement part can be interpreted as the indicator reliability in classical test theory. Second, the loading coefficients account for variable (indicator) specific measurement error and allow for different contributions to the latent variables. Third, the categorical CFA accounts for ordinality (i.e., unequal spacing) as the model uses the covariance matrix of the polychoric correlation matrix as part of a sandwich estimation procedure.

Here we fitted three latent variables, two for self-efficacy and one for reading instruction. As Norwegian teachers did not use the whole scale, we collapsed the 1-to-7 scale into a 1-to-6 scale (i.e., combining Statements 1 and 2 while shifting the whole scale backwards by subtracting 1). This resulted in fewer empty cells in the correlation matrix and resolved issues of comparability. In addition, the scale shift removed violations of equal slopes assumption (also known as proportional odds). In other words, we assume that the regression coefficients are equal across cut points (Agresti, 2015). To validate this assumption, a Brent test was conducted using single ordinal regressions (Greene, 2003).

Due to issues with the variance covariance matrix, we had to drop the first variable ("I adapt my instruction to every pupil's needs") in the self-efficacy scale for reading adaptation in both countries. This was not completely unexpected since the item is rather vague and almost asks the teachers to respond to the worth of the underlying latent variables as such. We also had to add a covariance between the error

terms for reading instruction. After allowing the error terms to correlate, all test statistics indicated a good fit of the model. Consequently, our scale validation differs from previous research. Specifically, previous research treated an ordinal 1-to-6 scale as interval/continuous (not to be confused with our scale). We suspect that the scale for reading adaptation only works because researchers assume that their ordinal scales are approximately continuous (like test scores) or weakly ordinal rather than ordinal (as, e.g., Likert scales and rating scales). However, assuming that the scales are equally spaced makes little theoretical sense. In other words, the probability of moving from 1 to 2 is not the same as moving from 3 to 4.

As we wanted to compare Sweden and Norway, we needed to make sure that the teachers came from a common population. Typically, country comparisons can be distorted if the questions asked have different meanings to the teachers (King & Wand, 2007). Thus, to compare scales we want to make sure that they had the same meaning in both countries. A pragmatic solution is to shift the scale (as we did in by collapsing the 1-to-7 scale into a 1-to-6 scale).

Overall, our measures roughly have the same meaning to the teachers in both countries. We include statistics for how well the model fitted to our data in Table 2 in the Appendix. Specifically, we fitted the countries separately and computed the goodness of fit statistics, while fixing the slopes and intercept. The chi square test indicated equality for slopes, but lack of equality for slopes and intercepts. There was also a lack of inequality for slopes for the higher order term self-efficacy. However, the chi square test may be overly conservative. Nevertheless, alternative tests (see Putnick & Bornstein, 2016) suggests that the measures have the same meaning to teachers at both the lower and higher level. However, we need to note one exception. Technically, we could not identify a model to test equality of slopes and intercepts for the higher order self-efficacy for reading instruction. To summarize, our findings agree with Vieluf et al. (2013) who suggest that teacher self-efficacy has the same meaning across countries.

In the third step, we fitted a regression model with the three latent variables, also known as a categorical structural equation model (SEM; Hoyle, 2012). We did not include other covariates (age, experience, special education) in the final model because these only contributed to a poor fit and had a low z-ratio. We report the standardized coefficients because we fitted the model with a probit link function (as convention).

First, we report the country difference in latent variables. Second, we report the fully latent variable model with three latent variables (SEM).² Third we report a multivariate ordered probit with three outcomes and two latent variables for efficacy as predictors. The limitation of SEM is that it is not a solution to the problem of causal inference in absence of propensity score weighting or instrumental variables (e.g.,

² *The theoretical difference between a series of ordinal regressions and the SEM is the assumption of the distribution. The ordinal regressions assume a univariate outcome distribution, whereas the multivariate ordered probit assumes a multivariate outcome distribution.*

MacKinnon & Pirlott, 2015). We have no instrument (e.g., randomized encouragement to efficacy) or sufficient variables to estimate weights (e.g., lagged variables)³. Finally, for readers who are unfamiliar with CFA and SEM, we make an attempt in the next section to summarize the main points in a nontechnical manner.

Structural equation modelling: A short description. A latent variable means a concept we measure indirectly because the concept cannot be directly observed. By using observable indicators (variables), we can estimate the latent variable. Examples of latent variables in educational studies include self-esteem, reading ability, metacognition, motivation, and so on.

In our study, reading instruction, motivation, and reading adaptation are latent variables and not directly measured in our research design. However, they are intrinsically related to the indicators (variables; e.g., reading aloud and text talk with the whole class or in teacher-guided small groups). In other words, we could say that the indicators are effects of the latent variables, meaning that teachers who strive to motivate struggling readers adapt their reading instruction.

In a CFA, we model each indicator as a function of the product of the factor loading and the latent variable plus measurement error. Each factor loading indicates the contribution of the indicator to the latent variable and as the reliability. In contrast to EFA, CFA can be considered theory driven.

An SEM combines a set of regression models with the latent variable as an outcome or predictor. In our study, we use latent variables as both predictors (Xs) and outcomes (Ys). Latent variables are indicated as circles (○) whereas observed variables are indicated as boxes (□). Arrows (→) indicate either factor loadings, regression coefficients, or error terms.

3. RESULTS

We structured the results section as follows. First, we compare differences across Sweden and Norway based on the CFA. Second, we estimate the SEM with the two latent variables as predictors of the latent variable for reading instruction. Third, we report the SEM with the individual three reading instruction variables as outcomes (e.g., multivariate probit). As we mentioned in the method section, the scales measured had the same meaning in both countries, and the SEM models were estimated using diagonally weighted least squares with a probit link function.

We report goodness of fit statistics in the Appendix (Table 2) alongside with unstandardized loadings (Table 3). Standardized loadings are reported in the running text in Figures 3, 4, 5, 6, and 7. In the measurement part, all of the standardized loading coefficients correlate above 0.5, suggesting acceptable reliability. In general,

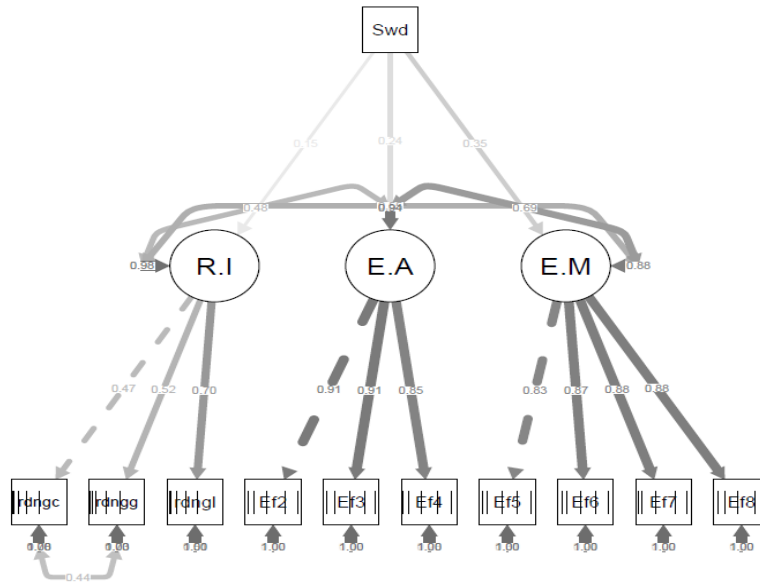
³ <https://cran.r-project.org/web/packages/kutils/kutils.pdf>. We formatted tables with the *kutils* package (Johnson et al., 2019) and *semPlot* for path diagrams (Epskamp, 2015) and used *ggplot2* for descriptive statistics (Wickham, 2016).

standardized loadings typically range between +/-1.0, but in CFA/SEM they can (theoretically) go beyond this range (unlike a correlation coefficient). However, as we want as much information as possible to contribute to the estimation of our model, we therefore suggest that 0.5 is a rule of thumb not a cut off. Consequently, higher values indicate a larger contribution.

3.1 How sampled teachers differ in means of latent variables by country

We now turn to the SEM to compare differences in latent means. In Figure 3, the boxes are observed variables whereas the circles are indirectly observed variables (i.e., latent variables). Note that the predictors are allowed to correlate. We may now answer our first research question (i.e., to what extent do Swedish and Norwegian teachers differ regarding their latent attitudes towards reading instruction, latent self-efficacy in reading motivation, and adapted reading instruction) Note that our model takes into account all three comparisons.

Figure 3. SEM with country dummy (Sweden = 1, Norway = 0) version for standardized coefficients with respect to the outcome(Y)

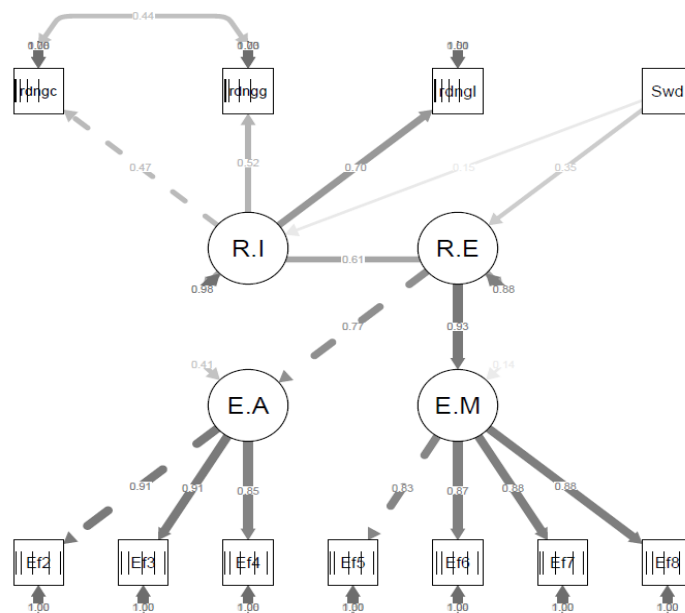


Note. Diagonally Weighted Least Squares with probit. Swd = Sweden, R.I. = attitudes towards reading instruction; E.A = self-efficacy for reading adaptation; E.M. = self-efficacy for reading motivation. See the running text for more information.

Swedish teachers reported higher values on all latent variables compared to Norwegian teachers. First, the Swedish teachers reported on average higher propensity for

positive attitudes towards reading instruction when compared to Norwegian teachers ($B = 0.31$). Second, the Swedish teachers reported on average higher propensity for self-efficacy for reading adaptation when compared to Norwegian teachers ($B = 0.48$). Third, the Swedish teachers reported on average higher propensity for self-efficacy for reading motivation when compared to Norwegian teachers ($B = 0.70$). The largest relative difference seems to be in self-efficacy for reading motivation. However, we caution against over-interpreting because we cannot directly compare the relative difference. Thus, we conclude that the countries differ substantively in answer to our first research question. We also conclude support for our first hypothesis (H1).

Figure 4. SEM with country dummy (Sweden = 1, Norway = 0) version for standardized coefficients with respect to the outcome(Y).



Note. Note the inclusion of a higher order variable for self-efficacy. Diagonally Weighted Least Squares with probit. Swd = Sweden, R.I. = attitudes towards reading instruction; R.E = self-efficacy for reading instruction; E.A = self-efficacy for reading adaptation; E.M. = self-efficacy for reading motivation. See running text for more information.

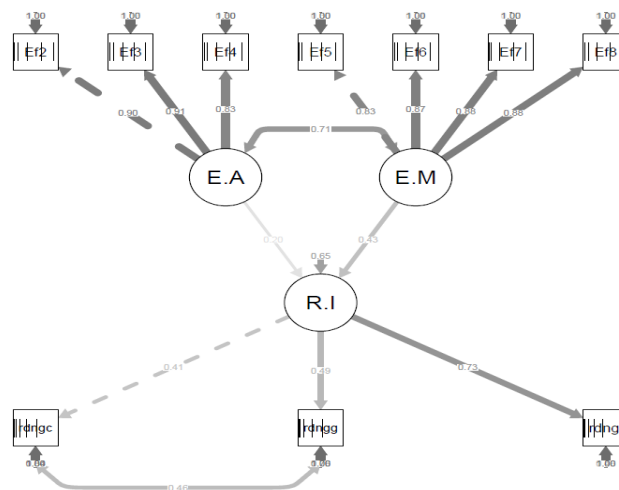
Before moving on to our second research question (i.e., to what extent does Swedish and Norwegian teachers' self-efficacy for reading motivation and reading adaptation predict attitudes towards reading instruction?), we also consider the case in which we allow reading motivation and reading adaptation to form a higher order latent variable (i.e., a general self-efficacy for reading instruction; Figure 4). Computing the

difference in means, we find a difference of 0.35 standard deviation between Sweden and Norway, with a high z-ratio suggesting a reliable difference from zero.

3.2 How self-efficacy for reading motivation and adaptation predicts attitudes towards reading instruction

We now turn to the regression part of the SEM. We report the combined samples in Figure 5. However, we report the country-specific coefficients in the running text only. Recall that we removed covariates that only deteriorated the fit (age, experience, special education). We therefore only report the latent variable for reading instruction regressed on the two latent variables for self-efficacy reported in what is known as LISREL-style.

Figure 5. SEM (Structural Equation Model) for fully standardized coefficients.

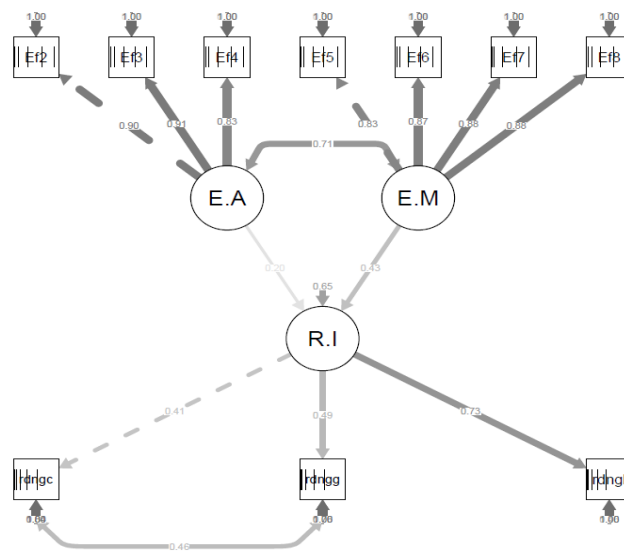


Note. Diagonally Weighted Least Squares with probit. No higher order term for self-efficacy. Reading instruction is regressed on self-efficacy for reading motivation and self-efficacy for reading adaptation. RI = attitudes towards reading instruction; EA = self-efficacy for reading adaptation; EM = self-efficacy for reading motivation.

In the regression part of the SEM, only one path has a z-ratio at the level of statistical significance in both Norway and Sweden (Appendix, Table 4). For the pooled sample (also known as combined), we observed that only one regression coefficient has a high z-ratio (i.e., is statistically significant; Figure 5). Although both coefficients have a moderate size, the standard errors of reading adaptation is large, indicating too much sampling and measurement uncertainty. Instead, we may have greater confidence in the reading motivation. On average, a standard deviation difference in

teachers' reading motivation is associated with a difference of 0.43 standard deviations, after adjusting for reading adaptation. We may also consider the case of borrowing strength from both reading adaptation and reading motivation.

Figure 6. SEM (Structural Equation Model) for fully standardized coefficients.



Note. Diagonally Weighted Least Squares with probit. Higher order term for self-efficacy of reading instruction. Reading instruction is regressed on self-efficacy for reading instruction. R.E. = self-efficacy for reading instruction; R.I. = attitudes towards reading instruction; E.A = self-efficacy for reading adaptation; E.M. = self-efficacy for reading motivation.

We refitted the model with a second order latent variable using reading adaptation and reading motivation (Figure 6). This model of a general reading self-efficacy (similar to Skaalvik & Skaalvik, 2010) also had a good fit and was associated with a greater magnitude ($B = 0.64$). This finding was also statistically significant.

We now consider Sweden and Norway separately (Appendix, Table 4), where the story is much the same. Numerically, the coefficients differ across countries. In Sweden, when comparing teachers, a one-unit difference in the standard deviation in self-efficacy for reading motivation is associated with a difference of 0.5 standard deviations in attitudes towards reading instruction, on average, after adjustment. In Norway, when comparing teachers, a one-unit difference in the standard deviation in self-efficacy for reading motivation is associated with a difference of 0.36 standard deviations in attitudes towards reading instruction, on average, after adjustment. We cannot say anything reliable about country differences as this cannot be statistically conceived as two samples from a common population. Instead, the coefficients

indicate the relative importance within the respective samples (this is after all not a random sample).

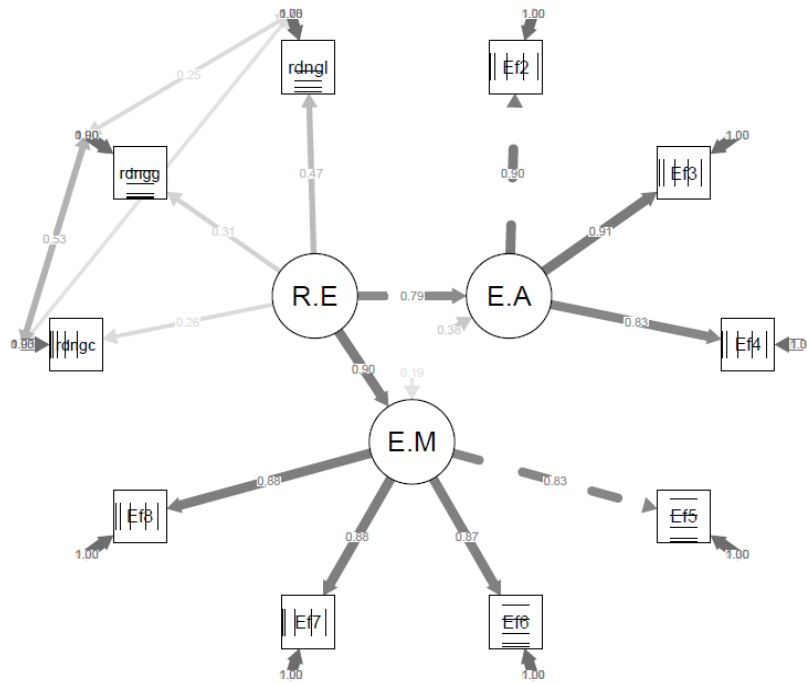
We summarize the analysis and answer our second research question as follows. Only self-efficacy for reading motivation had an educational importance for predicting attitudes towards reading instruction. The pattern holds for both the combined and individual samples. We also conclude there is support for our second hypothesis (H2). Although we do not find specific support for reading adaptation, we rightfully expect reading motivation to have a greater educational importance.

3.3 How self-efficacy for reading motivation and adaptation predict individual outcomes of propensity for reading aloud and conducting text talk in class and in small groups

We now turn to the individual outcomes and our third research question (To what extent do Swedish and Norwegian teachers differ regarding their propensity to read aloud to their pupils, conduct text talk in class, and conduct teacher-guided text talk in small groups?)

Here we show that the theoretical assumptions about the outcomes matter. As mentioned in the method section, within a SEM framework we assume a multivariate probit distribution. In the SEM framework, reading motivation particularly dominates in Sweden (Appendix, Table 4). Reading motivation positively predicts all three reading outcomes. The magnitude of the fully standardized regression coefficients ranges from 0.24 to 0.34, suggesting an acceptable predictive contribution of reading motivation for all three outcomes of reading instruction attitudes, adjusting for reading adaptation. However, the story differs in Norway. In Norway, only reading motivation seems to reliably predict teachers reading aloud in class. No association is found with regards to reading adaptation. The association is positive with an estimated fully standardized coefficient of 0.25. How do we interpret the differences to the latent variable analysis? We suggest that sample size is lower for Norway, indicating lower statistical power—where statistical power is the ability to detect a coefficient greater than zero given that the difference exists. We also suggest that the measurement is uncertain. Thus, borrowing the strength of the other predictors matters for predictive accuracy.

Figure 7. Structural Equation Modelling (SEM) as a multivariate ordinal probit for the pooled sample.



Note. Diagonally Weighted Least Squares with probit. RE = self-efficacy for reading instruction; EA = self-efficacy for reading adaptation; EM = self-efficacy for reading motivation.

We also consider the possibility of fitting a pooled sample of Sweden and Norway (Figure 7). Again, we change the model of self-efficacy to allow motivation and reading adaptation to form a general reading self-efficacy second-order variable. This model is statistically significant for all three outcomes: text talk in class ($B = 0.31$), teacher-guided text talk in small groups ($B = 0.26$), and teacher reading aloud (0.47). The magnitude is far greater for this model than for the country-specific models, suggesting that an overall pattern exists that is tied to an underlying construct of a general self-efficacy for reading instruction.

Thus, we can answer our final question: reading self-efficacy in general matters for all three types of attitudes towards reading instruction. We also conclude there is support for our third hypothesis (H3).

4. DISCUSSION AND CONCLUSIONS

Our study aimed at describe how Swedish and Norwegian teachers' self-efficacy for motivating their pupils and adapting their reading instruction vary with their attitudes towards reading instruction.

- 1) In answer to our first research question, our sample suggests that Swedish teachers held greater positive attitudes towards reading instruction. In addition, Swedish teachers had higher levels of latent self-efficacy for reading instruction (in a general sense), self-efficacy for reading adaptation, and self-efficacy for reading motivation (Figures 3 and 4 and Tables 2 and Table 3).
- 2) In answer to our second research question, Swedish and Norwegian teachers' self-efficacy for reading motivation but not for reading adaptation positively predicts attitudes towards reading instruction. However, self-efficacy for reading instruction (RE) positively predicts attitudes towards reading instruction (RI) (Figure 5 and 6 and Table 3).
- 3) In answer to our third research question, teachers' self-efficacy for reading motivation but not reading adaptation positively predicts the sampled Swedish teachers' attitudes towards reading aloud to their pupils, conducting text talk in class, and teacher-guided text talk in small groups. By contrast, Norwegian teachers' self-efficacy for reading motivation positively predicts attitudes towards reading aloud to their pupils. However, no reliable relationship was found between conducting text talk in class and in small groups for the Norwegian teachers (Figure 7 and Table 4).

Overall, the predictive power of our findings tends to be low to moderate. However, the results indicate that the role of self-efficacy varies between the two countries (see Andreassen & Reichenberg, 2018). Based on cross-cultural theories (Hofstede, 2001; Triandis, 2018; Vieluf et al., 2013), we interpret our results as due to different national cultures (individualism). Our results agree with socio-cognitive theory (Bandura, 1997; Vieluf et al., 2013) and our three (H1, H2, and H3) expectations. Similar to Skaalvik and Skaalvik (2010), we suggest that self-efficacy for reading adaptation and reading motivation form a combined latent variable that generates a stronger prediction.

Our study thus provides new insights because it is the first study to compare the self-efficacy of Norwegian teachers and Swedish teachers in connection with reading instruction. It is promising that there is an association between self-efficacy and attitudes towards reading instruction in the Scandinavian countries. Moreover, our results lend additional support to Bandura's (1997) conception of self-efficacy as a universal concept—as it holds in a Scandinavian context (Vieluf et al., 2013). However, we also must consider the fact that the level of teacher self-efficacy differs in the Scandinavian countries. This is a question that needs to be answered in future studies.

Our study indicates that the importance of teacher self-efficacy for motivation seems substantively greater in Sweden compared to Norway. However, motivated teachers are probably more inclined to act to improve their pupils' development as readers. Teachers with high motivation self-efficacy in Sweden and Norway are more likely to read aloud to their pupils, let pupils talk about texts, and conduct teacher-guided text talk in small groups. Previous studies have found that teachers' reading instruction predict pupils' reading (Beck et al., 2002; McKeown & Beck, 2003). Motivated teachers act as role models for inexperienced readers (Lane & Wright, 2007).

The study has some limitations. First, a limitation is that our questionnaire did not measure all dimensions of reading instruction. In addition, we did not visit classrooms and observe whether the teachers' reading instruction was in line with what they reported about their attitudes towards reading instruction in the questionnaire. In future studies, it would be beneficial to reduce influences of response styles by using other item formats such as vignettes and classroom observations with survey ratings such as the multi-trait method approach. Second, the number of participating teachers was limited. A larger sample may have given different results. A third limitation is that the sample was nonrandom, a key assumption in SEM. Finally, we conducted several tests to ensure that our measures had the same meaning to teachers in both countries. Nevertheless, we did not conduct all the tests needed (Putnick & Bornstein, 2016).

However, despite these limitations our results have consequences for teacher education. Supporting teachers in developing a strong sense of self-efficacy in order to strengthen their attitudes towards reading instruction in all subjects in general, and language instruction specifically, must be considered an important goal in teacher education.

REFERENCES

- Agresti, A. (2015). *Foundations of linear and generalized linear models*. Hoboken, NJ: John Wiley.
- Ajzen, I., & Fishbein, M. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic processes. *European review of social psychology*, 11(1), 1-33.
<https://doi.org/10.1080/14792779943000116>
- Alexander, R. J. (2006). *Towards dialogic teaching: Rethinking classroom talk*. Cambridge, MA: Dialogos.
- Andreassen, R., & Reichenberg, M. (2018). Svenske og norske læreres forventninger om å mestre elevtilpasset leseopplæring. [Swedish and Norwegian teachers' self-efficacy for differentiated reading instruction: The importance of practice and other teacher and school-related variables]. *Nordic Studies in Education*, 38(3), 232-251.
- Avanzi, L., Miglioretti, M., Velasco, V., Balducci, C., Vecchio, L., Fraccaroli, F. & Skaalvik, E. M. (2013). Cross-validation of the Norwegian Teacher's Self-Efficacy Scale (NTSES). *Teaching and Teacher Education* 31, 69–78. <http://doi.org/10.1016/j.tate.2013.01.002>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman
- Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. New York, NY: Guilford.
- Beck, I. L., & McKeown, M. G. (2006). *Improving comprehension with questioning the author: A fresh and expanded view of a powerful approach*. New York, NY: Scholastic.

- Bizer, G. Y., Barden, J. C., & Petty, R. E. (2003). Attitudes. In L. Nadel et al. (Eds.) *Encyclopedia of cognitive science*. (Vol. 1, pp. 247-253). Hampshire, England: MacMillan.
- Brozo, W. G., Moorman, G., Meyer, C., & Stewart, T. (2013). Content area reading and disciplinary literacy: A case for the radical center. *Journal of Adolescent & Adult Literacy*, 56(5), 353-357. <https://doi.org/10.1002/JAAL.153>
- Cunningham, A. E. (2005). Vocabulary growth through independent reading and reading aloud to children. In E. H. Hiebert & M. L. Kamil (Eds.), *Teaching and learning vocabulary: Bringing research to practice* (pp. 45-68). Mahwah, NJ: Erlbaum
- Epskamp, S. (2015). semPlot: Unified visualizations of structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal*, 22(3), 474-483. <https://doi.org/10.1080/10705511.2014.937847>
- Goldenberg, C. (1992). Instructional conversations: Promoting comprehension through discussion. *The Reading Teacher*, 46(4), 316-326.
- Greene, W.H. (2003). *Econometric analysis*. New Jersey: Pearson Education India.
- Guthrie, J. T., Van Meter, P., McCann, A. D., Wigfield, A., Bennett, L., Poundstone, C. C., . . . & Mitchell, A. M. (1996). Growth of literacy engagement: Changes in motivations and strategies during concept-oriented reading instruction. *Reading Research Quarterly*, 31(3), 306-332. <https://doi.org/10.1598/RRQ.31.3.5>
- Guthrie, J. T., Hoa, A. L. W., Wigfield, A., Tonks, S. M., Humenick, N. M., & Littles, E. (2007). Reading motivation and reading comprehension growth in the later elementary years. *Contemporary Educational Psychology*, 32(3), 282-313. <https://doi.org/10.1016/j.cedpsych.2006.05.004>
- Hall, L. A. (2005). Teachers and content area reading: Attitudes, beliefs and change. *Teaching and Teacher Education*, 21(4), 403-414. <https://doi.org/10.1016/j.tate.2005.01.009>
- Haney, J. J., Czerniak, C. M., & Lumpe, A. T. (1996). Teacher beliefs and intentions regarding the implementation of science education reform strands. *Journal of Research in Science Teaching*, 33, 971-993. [https://doi.org/10.1002/\(SICI\)1098-2736\(199611\)33:9<971::AID-TEA2>3.0.CO;2-S](https://doi.org/10.1002/(SICI)1098-2736(199611)33:9<971::AID-TEA2>3.0.CO;2-S)
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Thousand Oaks, CA: Sage.
- Hoyle, R. H. (Ed.). (2012). *Handbook of structural equation modeling*. New York, NY: The Guilford Press.
- Johnson, P., Kite, B., & Redmon, C. (2019). *kutils: Project management tools*. R package version 1.69. Retrieved from <https://CRAN.R-project.org/package=kutils>
- King, G., & Wand, J. (2007). Comparing incomparable survey responses: Evaluating and selecting anchoring vignettes. *Political Analysis*, 15(1), 46-66. <https://doi.org/10.1093/pan/mpi011>
- Klassen, R. M. & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, 102, 741-756. <http://doi.org/10.1037/a0019237>. <http://doi.org/10.1037/a0019237>.
- Kunnskapsdepartementet. (2006). *Læreplanverket for Kunnskapsløftet [The Knowledge Promotion]*. Retrieved from <http://udir.no/Lareplaner/Kunnskapsloftet/>
- Lane, H. B., & Wright, T. L. (2007). Maximizing the effectiveness of reading aloud. *The Reading Teacher*, 60(7), 668-675. <https://doi.org/10.1598/RT.60.7.7>
- Li, C.-H. (2016). The performance of ML, DWLS, and ULS estimation with robust corrections in structural equation models with ordinal variables. *Psychological Methods*, 21(3), 369-387. <https://doi.org/10.1037/met0000093>
- Li, C. H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, 48(3), 936-949. <https://doi.org/10.3758/s13428-015-0619-7>
- Loh, J. K. K. (2009). Teacher modeling: Its impact on an extensive reading program. *Reading in a Foreign Language*, 21(2), 93-118.
- Läsløftet. (2017). Literacy boost. Retrieved from <http://www.eli-net.eu/good-practice/examples-of-good-practice/detail/project/laeslyftet-literacy-boost>

- McKeown, M. G., & Beck, I. L. (2003). Taking advantage of read-alouds to help children make sense of decontextualized language. In A. van Kleeck, S. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 159–176). Mahwah, NJ: Erlbaum.
- MacKinnon, D. P., & Pirlott, A. G. (2015). Statistical approaches for enhancing causal interpretation of the M to Y relation in mediation analysis. *Personality and Social Psychology Review, 19*(1), 30–43. <https://doi.org/10.1177/1088868314542878>
- Mercer, N., & Howe, C. (2012). Explaining the dialogic processes of teaching and learning: The value and potential of sociocultural theory. *Learning, Culture and Social Interaction, 1*(1), 12–21. <https://doi.org/10.1016/j.lcsi.2012.03.001>
- Norwegian Directorate for Education and Training. (2015). Retrieved from <https://www.udir.no/in-english/>
- Nystrand, M. (2006). Research on the role of classroom discourse as it affects reading comprehension. *Research in the Teaching of English, 40*(4), 392–412.
- Pajares, F. (1997). Current directions in self-efficacy research. In H. W. Marsh, R. G. Craven, & D. M. McInerney (Eds.), *International advances in self-research* (pp. 1–49). Greenwich, CT: Information Age. <https://doi.org/10.1037/t63762-000>
- Palinscar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1*(2), 117–175. https://doi.org/10.1207/s1532690xci0102_1
- Pulido, D. (2007). The relationship between text comprehension and second language incidental vocabulary acquisition: A matter of topic familiarity? *Language Learning, 57*, 155–199. <https://doi.org/10.1111/j.1467-9922.2007.00415.x>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review, 41*, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). *Journal of Statistical Software, 48*(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78*(1), 40–59. <https://doi.org/10.17763/haer.78.1.v62444321p602101>
- Sharma, U., & Sokal, L. (2015). The impact of a teacher education course on pre-service teachers' beliefs about inclusion: An international comparison. *Journal of Research in Special Educational Needs, 15*, 276–284. <https://doi.org/10.1111/1471-3802.12043>
- Shunk, D. H., & DiBenedetto, M. K. (2015). Self-efficacy: Education aspects. In J. D. Wright (Ed.), *International encyclopedia of social and behavioral sciences* (2nd ed.). Oxford, UK: Elsevier. <https://doi.org/10.1016/B978-0-08-097086-8.92019-1>
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education, 27*(6), 1029–1038. <https://doi.org/10.1016/j.tate.2011.04.001>
- Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education, 26*(4), 1059–1069. <https://doi.org/10.1016/j.tate.2009.11.001>
- Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology, 99*(3), 611. <https://doi.org/10.1037/0022-0663.99.3.611>
- Soodak, L. C., & Podell, D. M. (1993). Teacher efficacy and student problem as factors in special education referral. *The Journal of Special Education, 27* (1), 66–81. <https://doi.org/10.1177/002246699302700105>
- Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*(6), 944–956. <https://doi.org/10.1016/j.tate.2006.05.003>
- Triandis, H. C. (2018). *Individualism and collectivism*. New York, NY: Routledge. <https://doi.org/10.4324/9780429499845>
- Tunström, M., & Wang, S. (2019). *The segregated city: A Nordic overview*. Copenhagen, Denmark: Nordic Council of Ministers. <https://doi.org/10.6027/Nord2019-007>

- Van Kleeck, A., Stahl, S. A., & Bauer, E. B. (Eds.). (2003). *On reading books to children: Parents and teachers*. London, England: Routledge. <https://doi.org/10.6027/Nord2019-007>
- Vieluf, S., Kunter, M., & van de Vijver, F. J. (2013). Teacher self-efficacy in cross-national perspective. *Teaching and Teacher Education, 35*, 92–103. <https://doi.org/10.1016/j.tate.2013.05.006>
- Westlund, B. (2013). *Att bedöma elevers läsförståelse: en jämförelse mellan svenska och kanadensiska bedömningsdiskurser i grundskolans mellanår*. Doctoral thesis [To assess reading comprehension: a comparison between Swedish and Canadian assessment discourses in upper elementary school]. Stockholm, Sweden: Natur och Kultur.
- Wickham, H. (2016). *ggplot2: elegant graphics for data analysis*. New York, NY: Springer-Verlag. <https://doi.org/10.1007/978-3-319-24277-4>
- Zee, M., & Koomen, H. M. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research, 86*(4), 981–1015. <https://doi.org/10.3102/0034654315626801>

APPENDIX: ADDITIONAL TABLES

Table 1. Exploratory factor analysis: Polychoric correlation and loadings

	Self-Efficacy	Self-Efficacy	Self-Efficacy	Self-Efficacy	Self-Efficacy	Attitudes
	Reading Motiva- tion	Reading Adapta- tion	Reading Motiva- tion	Reading Motiva- tion	Reading Adapta- tion	Reading Instruc- tion
Countries	Norway	Norway	Norway	Sweden	Sweden	Sweden
Efficacy2	0.297	0.762	0.127	0.323	0.805	0.16
Efficacy3	0.292	0.847	0.141	0.224	0.881	0.098
Efficacy4	0.244	0.695	0.095	0.357	0.75	0.102
Efficacy5	0.649	0.316	0.193	0.647	0.377	0.194
Efficacy6	0.694	0.323	0.153	0.758	0.331	0.202
Efficacy7	0.856	0.149	0.137	0.795	0.274	0.193
Efficacy8	0.737	0.313	0.098	0.863	0.203	0.127
readingclass	0.135	0.056	0.632	0.087	0.039	0.57
readingguided	0.038	0.038	0.724	0.127	0.087	0.733
readingaloud	0.141	0.18	0.358	0.217	0.164	0.289

Table 2. Statistics indicating how well the model fits the data.⁴

	Chi-square	Df	CFI	GFI	RMSEA	SRMR	Chi-square/Df	Invariance (P-value)	CFI change	RMSEA change
Combined	41.682	31.000	1.000	0.999	0.026	0.027	1.355			
By country	72.417	62.000	1.000	0.998	0.026	0.037	1.161			
Invariance slope	88.790	69.000	0.999	0.997	0.034	0.042	1.290	0.138	0.001	-0.008
Invariance intercept slope	147.568	106.000	0.998	0.995	0.040	0.040	1.396	0.000	0.001	-0.006
Combined higher order	41.682	31.000	1.000	0.999	0.026	0.027	1.355			
By country higher order	72.417	62.000	1.000	0.998	0.026	0.037	1.161			
Invariance slope higher order	89.068	70.000	0.999	0.997	0.033	0.042	1.271	0.000	0.001	-0.007

⁴ The combined sample, by country, holding slopes equal, holding slopes and intercepts equal. For the higher order term of self-efficacy included in the model: the combined sample, by country, holding slopes equal CFA = confirmatory factor analysis; RMSEA = root mean square error of approximation (excellent cut off < 0.05 or acceptable cut off < 0.08); SRMR = standardized root mean squared residual (cut off > 0.08); Comparative fit. index (cut off \geq 0.95); GFI = goodness of fit \geq 0.95; chi square; Df = degrees of freedom. Invariance (P-value) (cut off > 0.05), CFI change (cut off \geq |0.02|). RMSEA change (cut off \geq |0.03|). Note that these tests are imprecise for the higher order model due to the number of parameters estimated.

Table 3. Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). Diagonally Weighted Least Squares with probit. Unstandardized coefficients and standard errors.

	CFA NOR	CFA SWE	SEM NOR	SEM SWE
	Est w/stars	Est w/stars	Est w/stars	Est w/stars
<u>Factor Loadings</u>				
<u>R.I</u>				
readingclass	1.00 ⁺	1.00 ⁺	1.00 ⁺	1.00 ⁺
readingguided	0.87(0.16) ^{***}	1.21(0.16) ^{***}	0.80(0.18) ^{***}	1.30(0.21) ^{***}
readingaloud	0.80(0.17) ^{***}	1.20(0.17) ^{***}	1.19(0.33) ^{***}	1.65(0.34) ^{***}
<u>E.A</u>				
Efficacy2	1.00 ⁺	1.00 ⁺	1.00 ⁺	1.00 ⁺
Efficacy3	1.05(0.04) ^{***}	0.97(0.02) ^{***}	1.06(0.04) ^{***}	0.97(0.02) ^{***}
Efficacy4	0.88(0.04) ^{***}	0.95(0.02) ^{***}	0.88(0.04) ^{***}	0.95(0.02) ^{***}
<u>E.M</u>				
Efficacy5	1.00 ⁺	1.00 ⁺	1.00 ⁺	1.00 ⁺
Efficacy6	1.04(0.04) ^{***}	1.07(0.03) ^{***}	1.04(0.04) ^{***}	1.07(0.03) ^{***}
Efficacy7	0.94(0.07) ^{***}	0.92(0.04) ^{***}	1.07(0.05) ^{***}	1.07(0.03) ^{***}
Efficacy8	0.95(0.07) ^{***}	0.91(0.03) ^{***}	1.08(0.04) ^{***}	1.07(0.03) ^{***}
<u>Regression Slopes</u>				
<u>R.I</u>				
E.A			0.14(0.09)	0.07(0.06)
E.M			0.24(0.10) [*]	0.25(0.08) ^{**}
<u>Fit Indices</u>				
Scaled χ^2	61.17(30) ^{**}	105.72(30) ^{***}	36.41(19.26) [*]	76.85(17.54) ^{***}
RMSEA	0.02	0.05	0.00	0.04
CFI	1.00	1.00	1.00	1.00
SRMR	0.05	0.05	0.04	0.04

Note. R.I. = attitudes towards reading instruction; E.A = self-efficacy for reading adaptation; E.M. = self-efficacy for reading motivation; RMSEA = root mean square error of approximation (excellent cut off < 0.05 or acceptable cut off < 0.08); SRMR = standardized root mean squared residual (cut off > 0.08); Comparative fit. index (cut off > 0.95).

*p**p***p < 0.001 *Fixed parameter

Table 4. Structural Equation Modelling(SEM) as a Multivariate Ordinal Probit. Diagonally Weighted Least Squares with probit. Unstandardized coefficients and standard errors

	MPROB NOR	MPROB SWE	MPROB(H) NOR	MPROB(H) SWE
	Est w/stars	Est w/stars	Est w/stars	Est w/stars
<u>Factor Loadings</u>				
<u>E.A</u>				
Efficacy2	1.00*	1.00*	1.00*	1.00*
Efficacy3	1.06(0.04)***	0.97(0.02)***	1.05(0.04)***	0.97(0.02)***
Efficacy4	0.88(0.04)***	0.95(0.02)***	0.88(0.04)***	0.95(0.02)***
<u>E.M</u>				
Efficacy5	1.00*	1.00*	1.00*	1.00*
Efficacy6	1.04(0.04)***	1.07(0.03)***	1.04(0.04)***	1.07(0.03)***
Efficacy7	1.07(0.05)***	1.07(0.03)***	1.07(0.05)***	1.07(0.03)***
Efficacy8	1.08(0.04)***	1.07(0.03)***	1.08(0.04)***	1.07(0.03)***
<u>R.E</u>				
E.A			1.00*	1.00*
E.M			1.00(0.19)***	1.06(0.15)***
<u>Regression Slopes</u>				
<u>readingclass</u>				
E.A	0.08(0.13)	0.03(0.10)		
E.M	0.32(0.14)*	0.29(0.12)*		
R.E			0.49(0.12)***	0.39(0.09)***
<u>read- ingguided</u>				
E.A	0.10(0.12)	0.11(0.11)		
E.M	0.18(0.12)	0.32(0.12)**		
R.E			0.35(0.11)**	0.52(0.09)***
<u>readinga- loud</u>				
E.A	0.21(0.11)	0.14(0.11)		
E.M	0.24(0.13)	0.40(0.12)***		
R.E			0.55(0.12)***	0.65(0.09)***

	<u>Fit Indices</u>			
Scaled χ^2	36.36(17.48)**	93.22(16.64)***	34.91(18.61)*	79.96(16.9)***
RMSEA	0.00	0.05	0.00	0.04
CFI	1.00	1.00	1.00	1.00
SRMR	0.03	0.04	0.04	0.04

Note. RE. = self-efficacy for reading instruction; E.A = self-efficacy for reading adaptation; E.M. = self-efficacy for reading motivation; = root mean square error of approximation (excellent cut off < 0.05 or acceptable cut off < 0.08); SRMR = standardized root mean squared residual (cut off>0.08); Comparative fit. index (cut off>0.95). MPROB = multivariate probit within a SEM framework. H = second order latent variable.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Fixed parameter