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Relationships Between Language-Related Variations in Text Tasks, Reading Comprehension, and Students' Motivation and Emotions: A Systematic Review

Lina Wirth, Poldi Kuhl, Timo Ehmke

Leuphana University, Lüneburg, Germany

ABSTRACT

Background. There is consensus in research that students' motivation and emotions are important for learning and achievement processes in the educational context, as are language competencies that, related to the demands of academic language, enable participation in education. However, the interrelationships between these aspects have hardly been empirically investigated in depth.

Purpose and Methods. This systematic review addresses this research need, and aims to synthesise the existing evidence on the interrelationship between motivational/emotional and language-related variables. First, the relationship between learners' motivation and emotions, and their language competencies is considered. Second, findings on how motivation and emotion depend on language-related factors are compiled.

Results. A systematic data search conducted for this purpose yields seven studies. Five studies relate to the first concern, and confirm the effects of motivational and emotional variables on reading comprehension. Emotions, in particular, emerge as strong predictors. Two studies relate to the second concern, and report significant effects of language-related variations in text tasks on students' motivation; however, neither study considers emotions.

Implications. The findings are used to derive implications for language design in the educational context and identify important research gaps.

KEYWORDS:

motivation, emotions, language-related variations, reading comprehension, language competencies, students

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Correspondence:
Lina Wirth,
lina.wirth@leuphana.de

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INTRODUCTION

In this systematic review, two factors are brought together: motivational and emotional processes, and language, which refers to both the language used in the academic context and learners' individual language competencies. Both are relevant factors for learning and achievement; however, the two have been hardly empirically studied together in depth.

Empirical studies show a high correlation between learning success and interest (e.g. Ryan, Connell, & Plant, 1990; Jansen, Lüdtke & Schroeders, 2016; Renninger & Hidi, 2020). Interest, as an indicator of intrinsic motivation, influences how intensively one engages with certain learning materials and how deeply one processes them accordingly (Schiefele, 2001). Intrinsic motivation itself is seen as an important source of profound learning processes because it is based on self-determined intentions regarding the learning actions themselves. Extrinsic motivation, in turn, relates to the outcomes of learning actions (e.g. achieving good grades), and is considered to have both positive and negative effects on learning and achievement processes (Deci & Ryan, 1993; Ryan & Deci, 2000; Pekrun, 2018; Schiefele & Schaffner, 2020). Emotions are significant in that they are ubiquitous in all areas of learning and performance; they can relate to specific learning items,

dealing with challenges, social interactions with peers or teachers, and so on, and can profoundly influence cognitive processes central to learning (Pekrun & Linnenbrink-Garcia, 2014; Pekrun, 2018). Numerous empirical studies have investigated anxiety (e.g. Pekrun & Perry, 2014; Barosso, Ganley, McGraw, Geer, Hart & Daucourt, 2021; D'Agostino, Schirripa Spagnolo & Salvati, 2022). For example, they show that anxiety in exam situations limits task-related attention because worries, such as about possible failure, strain the resources of working memory (Pekrun & Perry, 2014).

The relevance of language in the educational context refers to both the use of academic language and learners' individual language competencies. An essential function of academic language is oral and written communication of learning content across all subject domains (Morek & Heller, 2012). In this context, academic language is accompanied by specific lexical and grammatical features that differ from everyday language use and become more complex as education progresses, thus placing higher demands on users (Cummins, 2006; Riebling, 2013). To cope with these language demands, participate in education, and engage receptively and productively with learning content, learners need specific language competencies that are appropriate to the academic contexts which involve going beyond everyday language skills (Cummins, 2006; Morek & Heller, 2012; Heller & Morek, 2015). Large-scale international educational assessments show that language demands translate into different levels of academic achievement depending on the extent to which students' academic language competencies are developed (e.g. Weis et al., 2019; Tarelli, Schwippert, & Stubbe, 2012).

Although learners' motivation and emotions as well as their academic language competencies are considered significant for individual educational success (Götz, Frenzel, & Pekrun, 2009; Heller & Morek, 2015), the relationships between these aspects have not been empirically investigated in depth. To the best of the authors knowledge, no literature reviews have summarised the available evidence on this topic. Here, the aim is to do this through a systematic review. First, indications are synthesised on the extent to which motivation and emotions can influence language competencies.

Moreover, in motivation and emotion theories, motivation and emotion are usually presented as independent variables. Nonetheless, one can assume that both constructs are much more complex and can also be considered as dependent variables. Therefore, this article's second concern is to reveal findings on how learners' motivation and emotions depend on language characteristics in the academic context. In terms of language characteristics, the focus is on tasks that vary in language, as they represent a central element of knowledge transfer and acquisition (Reusser, 2013). The aim is to provide a more detailed overview of the findings on the aforementioned issues, in order to classify and discuss them regarding the significance of language design in the context of teaching and learning. Furthermore, research desiderata and corresponding research recommendations are derived.

Accordingly, the research questions are as follows: (1) What is the relationship between learners' motivation and emotions, and their language competencies? (2) What is the relationship between language-related variations in tasks, and learners' motivation and emotions?

METHODS

Databases and Search Framework

Five online databases (FIS Bildung, PubPsy, Scopus, Google Scholar, and Web of Science) were searched using a prespecified framework with search criteria according to the topic. The criteria initially referred to the underlying constructs, that is, motivational and emotional processes, language-related variations of tasks and explanations (as two essential elements in knowledge transfer (Reusser, 2013; Morek, 2013)), and language competencies. In addition, the criteria required an empirical study design and a population with an age between 6 to 99 years. Studies which were either in English or German and published from 1980 onwards were considered. The search framework is presented in Table 1.

Table 1
Search Framework

Feature	Present study
Constructs	Motivational and emotional processes; language-related variations in tasks and explanations; language competencies
Population/Participants	People from six to 99 years
Comparison group	Not required
Study Design	Empirical
Geographic area	No limitations
Time	From 1980
Language	German and English

Search Criteria

As shown in Table 2, various motivational and emotional terms such as motivation, interest, effort, emotion, affect, joy, or anxiety; terms for explanations and tasks; and language-related terms such as language, understandability, readability, or comprehension were used as search terms in both English and in German. The search strings were composed such that at least one motivational or emotional term occurred in each article, as well as at least one task- or explanation-related term and at least one language-related term. Searching for such search strings was not possible in Google Scholar; therefore, the search in this database was only supplementary, using various combinations of the presented search terms to roughly search for individual articles not yet covered in the other databases.

Data Analysis

The database search yielded 2,768 hits. Most articles were found in PubPsy (1,217 hits) and Web of Science (1,139 hits). Scopus, FIS Bildung, and Google Scholar yielded 317, 65, and 30 hits, respectively. The 2,768 articles were then screened in several steps. As a first step, the authors reviewed each article at the title and abstract levels in three substeps: 1) using AbstrackR, resulting in a reduction to 287 articles; 2) using Mendeley, resulting in 121 articles; and 3) reviewing for relevance and suitability with this systematic review, resulting in 37 articles. Out of these, 33 articles were then subjected to full-text analysis, including coding, excluding 4 articles without accessible full texts. The coding included categories of the underlying questions and hypotheses of the studies, the respective samples, the study design includ-

Table 2

Research Protocol

Database	Search strings	Hits
PubPsy	(*Motivation* OR Anstrengung* OR Leistung* OR Interesse OR Lern* OR Emotion OR Affekt OR Gefühl OR Langeweile OR Angst OR Freude OR Furcht) AND (Instruktion OR Erklär*) AND (*sprach* OR *verstehen* OR Fachsprach* OR Fachwort* OR Readability)	1217
	(motivation OR effort OR interest OR determination OR emotion OR affect OR affective OR emotional* OR mood OR humor OR feelings OR boredom OR fear OR anxiety OR tension OR nervousness OR agitation OR joy OR happiness) AND (explanation OR instruction OR briefing OR teaching) AND (terminology OR technical terms OR technical language OR language OR linguistic complexity OR understanding OR understandability OR comprehension OR comprehensibility OR readability OR legibility)	
Web of Science	TS=((motivationOR interestOR determinationOR emotionOR affectOR affectiveOR emotional*OR moodOR humorOR feelingsOR boredomOR fearOR anxietyOR tensionOR nervousnessOR agitationOR joyOR happiness)) AND TS=((explanationOR instructionOR briefingOR exemplificationOR illustration)) AND TS=((language OR terminologyOR technical terms OR understandabilityOR comprehension OR comprehensibilityOR readabilityOR legibility))	1139
	TS=((*Motivation* OR Anstrengung* OR Leistung* OR Interesse OR Emotion OR Affekt OR Gefühl OR Langeweile OR Angst OR Freude OR Furcht)) AND TS=((Instruktion OR Erklär*)) AND TS=((Sprache OR *sprach* OR *verstehen* OR Fachsprach* OR Bildungssprach* OR sprachliche* OR Verstehen OR Fachwort* OR Readability OR Sprachkompetenz))	
Scopus	(Motivation OR Anstrengung* OR Leistung OR Interesse OR Emotion OR Affekt OR Gefühl OR Langeweile OR Angst OR Freude OR Furcht) AND (Instruktion OR Erklärung OR Erklären) AND (Linguistik OR Verstehen OR Verständlichkeit OR Nachvollziehbarkeit OR Zugänglichkeit OR Readability OR Lesbarkeit))	317
	(motivation OR effort OR interest OR determination OR emotion OR affect OR affective OR emotional* OR mood OR humor OR feelings OR boredom OR fear OR anxiety OR tension OR nervousness OR agitation OR joy OR happiness) AND (explanation OR instruction OR briefing OR teaching) AND (terminology OR technical terms OR technical language OR language OR linguistic complexity OR understanding OR understandability OR comprehension OR comprehensibility OR readability OR legibility)	
FIS Bildung	„(*Motivation* Anstrengung* Leistung* Interesse Lern* Emotion Affekt Gefühl Langeweile Angst Freude Furcht) (Instruktion Erklär*) (*sprach* *verstehen* Fachsprach* Fachwort* Readability)“	65
	“(motivation effort interest determination emotion affect mood humor feelings boredom fear anxiety tension nervousness agitation joy happiness) (explanation instruction briefing teaching) (terminology technical terms technical language OR language linguistic complexity understanding understandability comprehension comprehensibility readability legibility)”	
Google Scholar		30

Table 3
Coding Scheme

Authors	Year	Title	Form of Publication	Published in	Abstract	Origin	Language

Aim of the study	Sample				Research Question	Hypotheses	Research Design	Intervention
	Sample size	Population	Age	Gender				

Survey Instruments	Implementation	Method of Analysis	Results			
			Motivation and emotions as dependent variables			
			Effects of text consistency on motivation	Effects of different text difficulties on motivation	Effects of reading comprehension on emotions	Effects of personalized texts on motivation

Results (continued)				Research gaps
Motivation and emotions as independent variables		Moderated (indirect) effects	Further results and conclusions	
Effects of motivation on reading comprehension	Effects of emotions on reading comprehension			

ing interventions and survey instruments, and finally the results obtained in the studies. Figure 1 shows the PRISMA flow diagram (adapted from Page et al. (2021)) depicting the individual steps and respective hits with the reduction of the articles. Table 3 shows the complete coding scheme according to which the full texts were categorised.

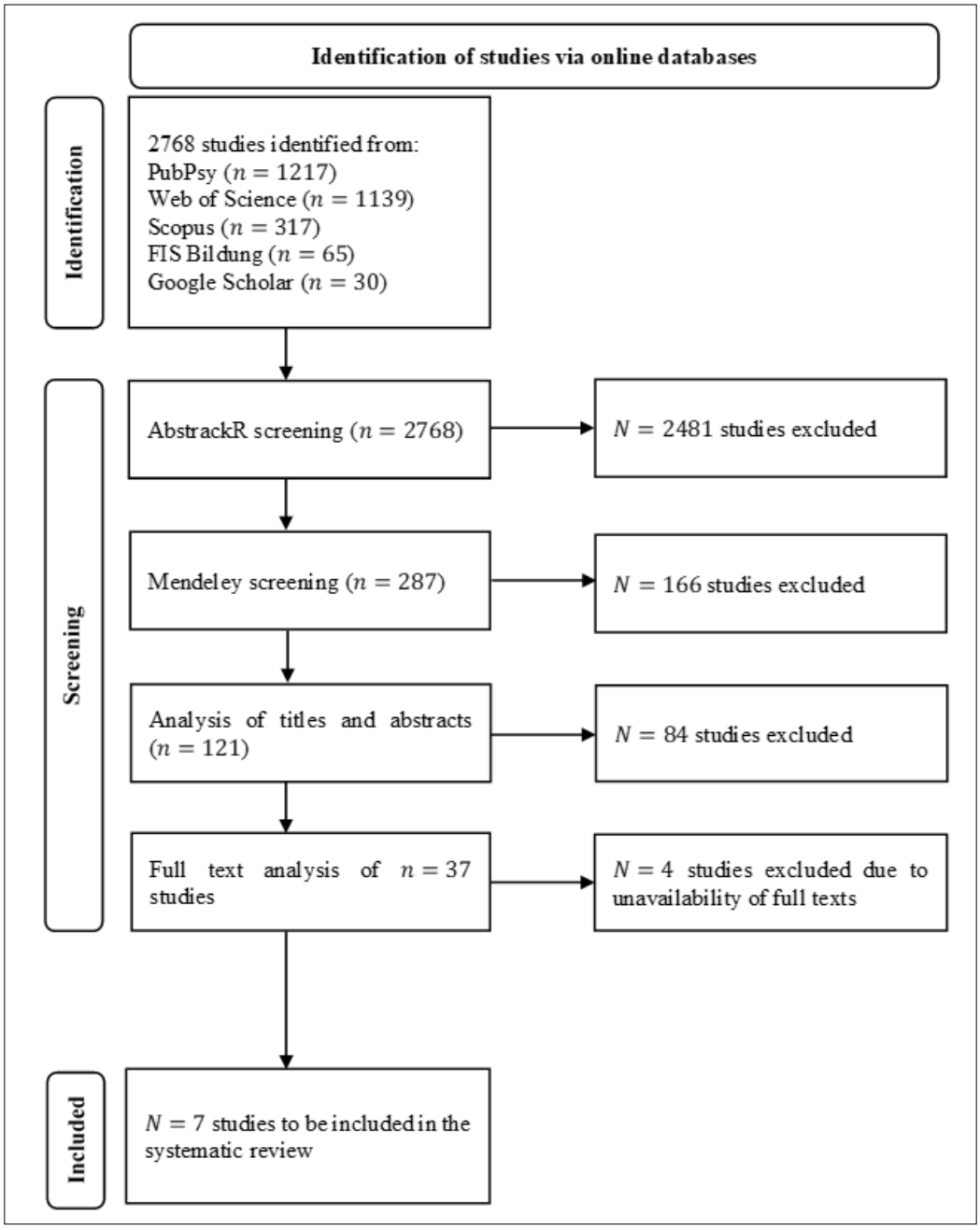
Based on the coding of the full texts, seven studies were identified that fully met the search criteria and served to answer the research questions. Table 4 provides an overview of these studies, including the samples, dependent and independent variables, and a summary of the effects. Because no study included explanations for their interventions, the focus was only on tasks.

Table 4
Included studies

Authors	Year	Title	Sample	Design	Independent Variables	Dependent Variables	Results
Braten, Ivar; Ferguson, Leila E.; Anmarkrud, Oistein; Stromso, Helge I.	2013	Prediction of learning and comprehension when adolescents read multiple texts: the roles of word-level processing, strategic approach, and reading motivation	*N=65* school students	Quantitative pre- and post-test design	Word recognition, reading pattern and motivation	Reading comprehension	The independent variables contributed to a 33% variance explanation in reading comprehension.
Chen, Po-Hsuan	2019	The joint effects of reading motivation and reading anxiety on English reading comprehension: a case of Taiwanese EFL university learners	*N=140* EFL-students	Quantitative crosssectional design	Reading motivation and reading anxiety	(Foreign language) reading comprehension	"Significant positive correlation between extrin-sic reading motivation and reading comprehension; Significant negative correlation between reading anxiety and reading comprehension"

Authors	Year	Title	Sample	Design	Independent Variables	Dependent Variables	Results
Hamedi, Seyyedeh Mina; Pish-ghadam, Reza; Fadardi, Javad Salehi	2020	The contribution of reading emotions to reading comprehension: the mediating effect of reading engage-ment using a structural equation modeling approach	*N=220* EFL-students	Quantitative cross-sectional design	Anxiety, enjoyment and boredom	(Foreign language) reading comprehension	"Positive correlation between enjoyment and reading comprehension; Negative correlation between anx-iety and boredom and reading comprehension"
Niazifar, Alireza; Shakibaei, Goodarz	2019	Effects of different text difficulty levels on Iranian EFL learners' foreign language Reading motivation and Reading comprehension	*N=40* all-male EFL-students	Quantitative pre- and posttest design	Different levels of text difficulty (vocabulary and syntactic structures below vs. beyond the learner's current English language level)	Motivation	Higher ratings in motivation after the intervention for students who worked with material beyond their current language level
Reichelt, Maria	2015	"Ansprechend Ansprechen ": Das Personalisierung-sprinzip als Designempfehlung für die Gestaltung multimedialer Lernangebote. Zwei Mixed-Methods-Studien über potenzielle Einflussfaktoren und mehrdimensionale Erklärungsmodelle	N_1=*210* school and university students; N_2= *265* university students"	Mixed-methods-design	Different degrees of personalization of texts (formal vs. personalized vs. named personalized); thematic stimuli as moderating variable	Motivation	"Higher motivation for university students who worked with personalized texts and for school students who worked with named personalized texts; No moderating effects of the thematic stimuli"
Rogiers, Amelie; Van Keer, Hilde; Merchie, Emmelien	2020	The profile of the skilled reader: An investigation into the role of reading enjoyment and student characteristics	*N=4269* secondary school students	Secondary analysis	Reading enjoyment	Reading comprehension	Significant positive correlation between reading enjoyment and reading comprehension
Welie, Camille; Schoonen, Rob; Kuiken, Folkert	2019	Eighth graders' expository text comprehension Do motivational aspects add to cognitive skills?	*N=152* secondary school students	Quantitative cross-sectional design	Ten motivational variables	Reading comprehension	No direct or indirect effects were found for any of the ten motivational variables

Figure 1
PRISMA Flowchart



RESULTS

The reviewed studies are from Europe (*n* = 4) and Asia (*n* = 3). Their sample sizes varied from *n* = 40 to *n* = 4269 participants, and consisted exclusively of school and university students. While one study included only male participants, female participants were slightly overrepresented in four studies (62.93% female participants overall). One study did not provide information on the sex ratio, while another had a balanced sex ratio (49.14% female participants). Six studies used quantitative research methods for their surveys, with one study based on a secondary analysis of quantitively collected data. Finally, one study used a mixed-methods approach by conducting qualitative interviews, in addition to quantitative data collection.

The results of this review are presented for the two research questions. In each case, the designs of the respective studies are presented first and then the respective results. The studies were then compared.

Relationship between Learners' Motivation and Emotions, and Their Language Competencies

First, the studies that answer the first research question on the relationship between learners' motivation and emotions, and their language competencies are presented. Five of the seven studies are classified for this research question.

General Study Characteristics: Sample, Setting, and Research Design

The five studies assigned to the first research question aimed to examine the relationship of motivational and/or emotional aspects with reading comprehension. Reading comprehension is a receptive sub-competency of language competency, whereby *receptive* refers to understanding language, e.g., comprehending facts or texts. In comparison, productive language competencies refer to the production of language, e.g., explaining facts or writing texts (Paetsch et al., 2016).

Using a sample of *n* = 65 tenth graders, Bråten, Ferguson, Anmarkrud, and Strømsø (2013) examined how motivation, word recognition skills, and individual reading patterns individually contributed to variance in reading comprehension while reading different science texts. Data were collected in a quantitative pretest and posttest design, in which the students were asked to read five different texts about sun exposure and health. This analysis was conducted in two steps: First, only prior knowledge was considered a predictor of reading comprehension. Second, motivation, word recognition, and reading patterns were included in the analysis.

Welie, Schoonen, and Kuiken (2019) also focused on motivation. Using a sample of *n* = 152 school students, they examined the moderating influences of ten different motivational variables on the effect of cognitive skills on reading comprehension. The ten motivational variables were selected because they were thought to be relevant for the development of reading comprehension. The variables included: intrinsic motivation, avoidance, value, devalue, self-efficacy, perceived difficulty, peer value, preference for challenge, and mastery goal. In addition, the authors compared the effects between monolingual and bilingual students as well as between poor and strong readers.

Meanwhile, both Chen (2019) and Hamedi, Pishghadam, and Fadardi (2020) were in a bilingual context. Chen (2019) examined the joint effects of reading motivation and reading anxiety on comprehension of English-language texts; the sample included *n* = 140 university students who were learning English as a foreign language for an average of seven years. Hamedi, Pishghadam, and Fadardi (2020) investigated the effects of three emotions—anxiety, enjoyment, and boredom—on comprehension of English-language texts among *n* = 220 university students who were also learning English as a foreign language. Both studies used a quantitative, cross-sectional design.

Rogiers, Van Keer, and Merchie (2020) investigated the relationship between reading enjoyment and reading comprehension. The authors conducted a secondary analysis of the 2009 Program for International Student Assessment (PISA) data on *n* = 4269 15-year-old Flemish students.

Research Results

Regarding the relationship between motivation and reading comprehension, Bråten, Ferguson, Anmarkrud, and Strømsø (2013) showed a statistically significant contribution of prior knowledge to reading comprehension. Including motivation, word recognition skills, and reading pattern as predictors helped explain an additional variance of 33%. Moreover, both word recognition skills and reading patterns as well as reading self-efficacy as a proxy of motivation were statistically significant and positive predictors of reading comprehension.

However, Welie, Schoonen, and Kuiken (2019) found only weak direct effects for all ten motivational variables on reading comprehension, and no moderating influences of any motivational variables on the effect of cognitive skills on reading comprehension. The comparison between monolingual and bilingual students as well as poor and strong readers also showed no significant direct or indirect effects of motivational variables.

Meanwhile, Chen (2019) showed a significant positive correlation between extrinsic reading motivation and reading comprehension. Intrinsic motivation had no direct effect, but an indirect effect on reading comprehension via extrinsic motivation: students with higher intrinsic reading motivation have higher extrinsic motivation, which in turn leads to better reading comprehension. Regarding the role of emotions, Chen (2019) showed a significant negative correlation between reading anxiety and reading comprehension. Reading anxiety proved to be the strongest predictor of reading comprehension compared to extrinsic motivation. The author further analysed the interaction effects of motivation and anxiety. Students with high motivation and low anxiety showed the highest reading comprehension, followed by students with high motivation and high anxiety, and low motivation and low anxiety. Students with low motivation and high anxiety had the lowest reading comprehension scores. The author argues for additional compensatory effects: high reading motivation seems to compensate for high reading anxiety, whereas low reading anxiety seems to compensate for low reading motivation.

Hamedi, Pishghadam, and Fadardi (2020) revealed a positive correlation between enjoyment and reading comprehension, while both anxiety and boredom were negatively correlated with reading comprehension. Anxiety and boredom were both stronger predictors of reading comprehension than enjoyment.

Rogiers, Van Keer, and Merchie's (2020) secondary analysis of the 2009 PISA data also showed a significant positive cor-

relation between reading enjoyment and reading comprehension; students with higher scores in reading enjoyment also scored higher in reading comprehension. Students from high socioeconomic backgrounds scored significantly higher in reading enjoyment and comprehension than those from low socioeconomic backgrounds, as did students with Dutch as the first language than those with Dutch as the second language for reading enjoyment.

Comparison of the Studies

While the basic goal of the aforementioned five studies was to examine the effects of motivational and/or emotional variables on reading comprehension, the main commonality among these studies was their quantitative research design. However, a closer look reveals some differences between these studies. First, motivation and emotions, as independent variables, were not captured in the same way in the five studies. While two studies each only considered motivation and only emotions, the remaining study analysed both motivational and emotional variables.

Comparing the results of the motivational effects on reading comprehension, a mixed picture emerges at the first glance. While Bråten et al. (2013) found a positive correlation with reading comprehension for the motivational variable self-efficacy, Welie, Schoonen, and Kuiken (2019) found no evidence. Moreover, the latter found no significant direct or indirect effects on reading comprehension for the other motivational variables they considered. This contradiction becomes particularly clear considering that both studies collected their data from school students. Nevertheless, Welie, Schoonen, and Kuiken (2019) themselves questioned the validity of their findings, noting a discrepancy between pre-test motivation and students' actual motivation during the intervention. The authors assumed that this discrepancy was because the population comprised students of different educational levels who, when their motivation was surveyed before the test, expected that the test would contain tasks and texts that were already familiar with in their schooling context, that is, content which corresponded to their educational level. Accordingly, all students showed high motivation. However, all students were presented with the same texts, which presumably led the students with lower educational levels to perceive the test tasks as very challenging and to doubt their ability to solve them (low self-efficacy); that is, their motivation decreased. This is reflected in their significantly poorer performance on the test items compared with students with higher educational levels. Thus, while one can assume that Bråten et al.'s (2013) result—self-efficacy and reading comprehension are correlated—is more valid than the result of Welie, Schoonen, and Kuiken (2019)—self-efficacy and reading comprehension are not correlated—, Bråten et al. (2013) found no significant effect of the motivational variable 'task value' on reading comprehension. Based on expectancy-value theory (Wigfield & Eccles, 2000), they assume that this can hold because task value correlates more with the choice of certain tasks than with performance. The comparison of intrinsic and extrinsic motivation in Chen (2019) showed direct positive effects of extrinsic motivation on reading comprehension, but only an indirect effect of intrinsic motivation on reading comprehension via extrinsic motivation. However, note that Chen (2019) was in the context of English as a foreign language, and thus, captured the motivation to read and comprehend foreign language texts.

More agreement exists regarding the effects of students' emotions on their reading comprehension. Chen (2019) surveyed reading anxiety; Rogiers, Van Keer, and Merchie (2020) focused on reading enjoyment; and Hamedi, Pishghadam, and Fadardi (2020) examined anxiety, enjoyment, and boredom. All three studies postulated significant correlations between students' emotions and reading comprehension. The positive emotion of reading enjoyment consistently showed significant positive correlations with reading comprehension, while the two negative emotions—reading anxiety and boredom—showed significant negative correlations with reading comprehension. Notably, Hamedi, Pishghadam, and Fadardi (2020) found anxiety and boredom to be stronger predictors than reading enjoyment. Further, Chen (2019) found reading anxiety to be a stronger predictor of reading comprehension than (extrinsic) motivation. Thus, some negative emotions seem to be stronger predictors than some positive emotions and motivation. Chen (2019) further examined different combinations of motivational and emotional variables. The author found different effects on reading comprehension, and identified compensatory effects between motivational and emotional states. As noted earlier, in the context of motivation, both Chen (2019) and Hamedi, Pishghadam, and Fadardi (2010) measured emotions toward reading foreign language texts. Meanwhile, both Rogiers, Van Keer, and Merchie (2020) and Welie, Schoonen, and Kuiken (2019) additionally examined the effects of emotions and motivation on reading comprehension in relation to students' language background. However, the two sets of authors found differing results: Rogiers, Van Keer, and Merchie (2020) found that students with Dutch as their first language showed significantly higher scores in reading enjoyment than their peers with Dutch as their second language; by contrast, Welie, Schoonen, and Kuiken (2019) did not find any correlations due to the discrepancies noted earlier. Rogiers, Van Keer, and Merchie (2019) also found that students from high socioeconomic backgrounds scored higher on reading enjoyment and reading comprehension than students from low socioeconomic backgrounds.

Relationship Between Language-Related Variations of Tasks, and Learners' Motivation and Emotions

The remaining two studies focused on the relationship between language-related variations in tasks and learners' motivation, but not with emotions.

General Study Characteristics: Sample, Setting, and Research Design

Both studies considered language-related variations in texts related to tasks as a predictor, and students' motivation as a dependent variable. Niazifar and Shakibaei (2019) varied the level of *language demand* to determine how different degrees of lexical and grammatical demands of textual materials affect the reading motivation of $n = 40$ male students learning English as a second language. Participants were divided into two groups, one of which received text material one level above their current English language level, in terms of syntactical structure and vocabulary, over a ten-week period. The other group received text material for the same period, with requirements one level below their current English language level.

Reichelt (2015) examined the effects of varying *degrees of text personalisation* on students' motivation using two mixed-method surveys. In the first survey, three degrees of personalisation were compared: (1) formal texts using indefinite pronouns and impersonal articles, (2) personalised texts using possessive pronouns and direct address, and (3) named personalised texts using possessive pronouns and direct address by name. The effects of these different degrees of personalisation were then compared betwee $n = 105$ school and university students each. The second survey was conducted only among university students ($n = 265$) and examined the interaction of formal and personalised texts with an emotionally (child labour) and a cognitively (statistics) demanding topic.

While Niazifar and Shakibaei (2019) used a quantitative pre- and post-test survey to assess reading motivation before and after the intervention, Reichelt (2015) assessed motivation in both surveys before the intervention, and at two time points during and after the intervention.

Research Results

A comparison of the pre- and post-surveys in Niazifar and Shakibaei (2019) revealed significantly higher post-intervention motivation in the group that had received text material beyond their current language level than the group with the simplified text material. Notably, the latter group showed no significant increase in motivation after the intervention.

Meanwhile, Reichelt (2015) found the least motivation under formal text conditions during and after the intervention for all participants, and the highest motivation under personalised text. Notably, university students were significantly more motivated compared with school students when working with personalised texts than formal and named personalised texts. In contrast, school students were the most motivated while using named personalised texts. In the second survey, the author only considered formal and personalised texts, and examined the interaction effects with the topics 'child labour' and 'statistics'. Here, formal texts were associated with higher motivation for child labour than personalised texts. Regarding statistics, the pre-test measurement showed higher motivation when working with personalised texts compared to formal texts; however, during the state measurements, students reported higher motivation regarding formal than personalised texts. Finally, regarding child labour, the author expected a moderating influence of emotional load on the effect of the personalised text condition on motivation, but could not confirm the same. The same could not be assessed for statistics because of the lack of correlation between the personalised text condition and motivation.

Comparison of the Studies

According to the second research question, the aim of both studies was to investigate the relationship between language-related variation in tasks and motivation. Both studies did this by examining the effects of language-related variation in text tasks, although the variation occurred in different ways in both studies. While Niazifar and Shakibaei (2019) varied grammar and vocabulary to compare different linguistic demands, Reichelt (2015) varied pronouns and addresses for didactic purposes. Despite these different forms of language-related variation, both studies found significant effects on motivation. Thus, on the one hand, grammar and vocabulary at a slightly elevated level led to higher motivation; on the other hand, personalising texts (by name) promoted students' motivation when working with texts on a neutral topic.

Contrary to the initial research question, emotions were not included as a dependent variable in both studies. Only Reichelt (2015) investigated the moderating effect of emotional load, but could not confirm this.

In both studies, motivation was measured before and after intervention. Reichelt (2015) additionally took two state measurements of motivation during the intervention. These additional measurements showed that changes in motivation were already detectible at these time points: students who received personalised texts had the highest motivation before the test; however, during the intervention, students who worked with formal texts had significantly higher motivation.

Regarding the samples, Niazifar and Shakibaei's (2019) sample comprised students from a private language learning institute. Meanwhile, Reichelt's (2015) sample comprised both school and university students. The latter study revealed differences between school and university students in terms of the effects of different levels of personalisation on motivation. However, when both studies are considered together, no generalisable patterns emerge regarding whether certain effects are more likely for school or university students, female or male participants, or a particular topic area due to the different operationalisations used in each study.

DISCUSSION

This systematic review sought to identify and compare the findings on the relationships between language-related variations in tasks, language competencies, and motivation and emotions. All reviewed studies referred to school and university students. All five studies regarding the first research question considered reading comprehension to be language competency. Four of these studies stated that students' motivation and emotions can influence their reading comprehension. Specifically, Bråten et al. (2013) and Chen (2019) found significant effects of motivational variables on reading comprehension. Chen (2019) specifically identified extrinsic motivation as a significant predictor and having a direct effect, while intrinsic motivation had an indirect effect via extrinsic motivation. The author, along with Hamedi, Pishghadam, and Fadardi (2020) and Rogiers, Van Keer, and Merchie (2020), found significant effects of emotions on reading comprehension. Reading enjoyment, as a positive emotion, was significantly positively correlated with reading comprehension, while anxiety and boredom, which are negative emotions, were significantly negatively correlated with reading comprehension. Negative emotions, particularly anxiety, showed the highest predictive power compared with both enjoyment and extrinsic motivation. Welie, Schoonen, and Kuiken (2019) was an exception, finding no direct or indirect effects of motivational variables; that is, the authors did not consider emotions at all. However, as presented above, the authors noted the limitations on the validity of their findings, and rather argued more for the presence of a correlation between motivation and reading comprehension.

The remaining two studies were on the second research question on the relationships between language-related variations in tasks and learners' motivation; both studies reported a significant relationship. However, language-related variation was operationalised differently in the two studies: Niazifar and Shakibaei (2019) focused on *linguistic demands*, and varied the level of difficulty of grammar and lexis in the text material; meanwhile, Reichelt (2015) varied the text materials in a didactic sense by *personalising texts* to increase readers' motivation. Importantly, the extent to which emotions are also influenced by language-related variations remains unanswered, as neither study considered emotions as a dependent variable.

Significance of the Studies and Practical Implications

Overall, the reviewed studies state that students' emotions and motivation influence their reading comprehension, that is, their (receptive) language competencies, while motivation itself is influenced by language characteristics in the academic context. Thus, there are relationships between language-related variations in text tasks, reading comprehension, and students' motivation and emotions. Therefore, in terms of conducive language design in the context of teaching and learning, learners' motivation and emotions should be also considered. Despite the small number of studies, their findings have some initial indications and orientations for instructional practice regarding instructional language design that promotes high motivation and positive emotions. In particular, the studies assigned to the second research question are relevant here, as they provide concrete approaches to how language can be used in the educational context to promote motivation. In terms of students' academic language competencies, Niazifar and Shakibaei's (2019) findings are particularly noteworthy: the authors varied linguistic demands at the lexical and grammatical levels, and argued that instructional materials should be designed slightly beyond students' current language level in order to foster their motivation. The authors justified this by saying that under these conditions, their participants were curious about the meaning of unknown terms or phrases and wanted to understand them. However, note that the authors used a sample with a relatively homogeneous language level; moreover, the participants were selected according to the results of a language placement test.

Before concrete implications for language design in educational contexts can be developed, further differentiated studies are needed on how linguistic demands affect motivation. For example, one may question whether materials with simplified language are more likely to have a positive effect on the motivation of students with low language competencies; potential reasons may be that by doing this, their understanding can be improved, and they are more likely to experience learning success, which in turn motivates them toward future assessments. Large-scale assessments such as PISA (Weis et al., 2019) or Trends in International Mathematics and Science Study (TIMSS; Tarelli, Schwippert, & Stubbe, 2012) show that students' language competencies vary greatly depending on their language background, socioeconomic status, or cultural background, and that this is clearly reflected in their performance. In particular, students who do not learn their mother tongue have lower language competences, and thus, lower educational success (Tarelli, Schwippert, & Stubbe, 2012). One may assume that this is why three of the seven studies were conducted in the context of English as a foreign language. Furthermore, Rogiers, Van Keer, and Merchie (2020) also showed that students from different language and socioeconomic backgrounds scored differently on both reading enjoyment and reading comprehension; this reinforces the idea that students' academic language competencies are heterogeneous, and therefore, language demands may have different effects on them.

Research Recommendations and Outlook

This systemic review finds these heterogeneous language competencies of students as the first research gap. Crucially, future research should distinguish between students with strong and weak language skills.

Furthermore, the relationship between linguistic variations in (text) tasks and emotions was not considered. Both Chen

(2019) and Hamedi, Pishghadam, and Fadardi (2020) found emotions to be significant independent variables affecting reading comprehension. This underscores the high relevance of emotions to learning and achievement postulated in emotion theories (e.g. Pekrun, 2018). Therefore, future research should also consider emotions as dependent variables, assuming that they are not only relevant as predictors but also dependent on other variables, such as language-related variations.

In addition, the findings of this review provided evidence that surveying motivation and emotions not only before and after testing, but also at multiple measurement time points is important. Reichelt (2019) took such an approach, and found differences in students' motivation before the test and during the test. Welie, Schoonen, and Kuiken (2019) also assume a discrepancy in the students' motivation measurements before the test with their presumed actual motivation during the test. This suggest that motivation may be a dynamic construct. Therefore, future studies should consider collecting more than two measurement time points for insights into the change processes of the two variables.

As noted in the descriptions of methodology of the reviewed studies, explanations were not the subject of the intervention in any study. Moreover, all studies referred to written language: reading comprehension as a receptive language competence, on the one hand, and language in text tasks, on the other hand. However, in the search framework, we did not delineate whether language in written or oral form should be studied. Thus, there are two further research gaps: first, investigating explanations; and second, productive language skills and listening comprehension as well as language-related variations of oral language.

Furthermore, all reviewed studies referred exclusively to school and university students, although no restrictions were imposed regarding age or learning context in the search criteria. Thus, research is needed on other age groups or learning contexts, such as out-of-school learning.

Finally, the small database on which this systematic review was based indicates that further research is needed.

In conclusion, theories and studies on instructional design postulate that effective and conducive instructional design is characterised by the individual support of learners (Lipowsky, 2020). On the one hand, academic language in relation to learners' academic language competencies is important; on the other hand, motivation and emotion are also significant. Therefore, for learning and achievement, perhaps learners can also be individually supported if the language of instruction is designed to promote motivation and emotion according to their language competencies. Hence, in order to gain new insights into instruction design, more in-depth research on the discussed topics is required, with special attention to the effects of linguistic variations on learners' motivation and emotions.

CONCLUSION

In the present systematic review, two factors were brought together: motivational and emotional processes and language, both in terms of the language used in the academic context and the learners' individual language competencies.

As stated in the introduction, motivation and emotions as well as language are important for individual educational success. Following up on this, the aim of this systematic review was to find out what research findings already exist on the relationships between these factors. The systematic review process yielded five studies that investigated the effects of learners' motivation and emotions on reading comprehension, and two studies that investigated the effects of language-related variations in text tasks on learners' motivation. In summary, the results of these studies state that there are relationships between language-related variations in text tasks, learners' reading comprehension and their motivation and emotion. Significant positive effects on reading comprehension were found for high motivation and positive emotions (e.g., joy) and significant negative effects on reading comprehension were found for low motivation and negative emotions (e.g., anxiety, boredom). Conversely, motivation was found to be significantly affected by language-related variations in text tasks. Both the personalisation of texts and different grammatical and lexical demands were associated with significant differences in learners' motivation. Emotions, however, were not considered in this context, leaving one research concern of the present systematic review unanswered.

In conclusion, the results indicate that in the sense of conducive instructional design that enables individual support for learners, their language competences as well as their motivation and emotions should be considered together. In particular, the effects of language-related variations on motivation seem to be of great importance. It could be shown that learning and performance processes cannot only be directly promoted by an instructional language design oriented towards the learners' linguistic competencies. Rather, the language design also has a significant influence on learners' motivation and thus indirectly on learning processes and achievement. While the findings of this systematic review have provided initial indications and orientations for an instructional design that promotes motivation and emotions, further and more differentiated research is needed to deepen the previous findings and to develop concrete guidelines for educational practice.

DECLARATION OF COMPETING INTEREST

None declared ■

AUTHOR CONTRIBUTIONS

Lina Wirth: conceptualization, data curation, formal analysis, funding, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

Poldi Kuhl: conceptualization, data curation, formal analysis, funding, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

Timo Ehmke: conceptualization, data curation, formal analysis, funding, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

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