Differences in Reading Self-Efficacy between School Years and according to Gender

Fátima Olivares*, Raquel Fidalgo*, and Mark Torrance**

*University of León, Spain, **Nottingham Trent University, U.K.

Abstract

Differences in reading self-efficacy between school years and as a function of gender were studied in a sample of 1,060 Spanish students from the third year of primary education up to the fourth year of compulsory secondary education (equating to Years Four to Eleven in the British system). A scale for reading self-efficacy was used that differentiated three dimensions according to the level of complexity of the reading skills involved in a reading comprehension task. It distinguished between decoding skills, the construction of the textbase and the model of the situation. The results indicated a differential pattern of change in reading self-efficacy that emerged in the different dimensions, with a trend towards an increase in decoding and textual self-efficacy and a decrease in situational self-efficacy. In all dimensions of self-efficacy, the transition from primary to secondary education constituted a critical period. No differences in reading self-efficacy between the genders were observed during the period of education considered.

Keywords: reading self-efficacy, differences between the genders, differences in schooling, reading comprehension achievement.

Resumen

Se analizan las diferencias en la auto-eficacia lectora entre cursos a lo largo de la escolaridad and en función del sexo en una muestra de 1.060 alumnos españoles distribuidos desde 3.º EP a 4.º ESO. Se utilizó una escala de auto-eficacia lectora que diferencia tres dimensiones de acuerdo con el nivel de complejidad de las habilidades de lectura implicadas en la tarea de comprensión lectora, diferenciando entre habilidades ligadas a la decodificación, la construcción del texto base y el modelo de situación. Los resultados sugieren un patrón de cambio diferenciado en la auto-eficacia lectora en función de las diferentes dimensiones evaluadas, mostrando un incremento en la auto-eficacia en decodificación y textual, y un decrecimiento en la relacionada con el modelo de situación. En todas las dimensiones de la auto-eficacia existe un periodo crítico en el paso a la Secundaria. No se obtuvieron diferencias en la auto-eficacia lectora en función del género a lo largo de la escolaridad.

Palabras clave: auto-eficacia lectora, diferencias de género, diferencias en la escolaridad, rendimiento en comprensión lectora.

Correspondence concerning this article should be adressed to Raquel Fidalgo Redondo, Departamento de Psicología, Sociología y Filosofía, Facultad de Educación, Universidad de León, Campus de Vegazana s/n, 24071, León, Spain. Telephone: +34 987293152, Fax: +34 987291135. E-mail: rfidr@unileon.es

Introduction

Self-efficacy is defined as individuals' judgments or self-assessments of their abilities to perform a task successfully (Bandura, 1977). These beliefs in respect of self-efficacy determine achievement, effort and perseverance, as well as the choice of tasks performed by pupils (Zimmerman, 2013). Thus, students with an optimal level of self-efficacy find it easier to participate in tasks, work harder, persevere for longer and have fewer adverse emotional reactions to the difficulties presented by a task (Bräten, Ferguson, Anmarkrud, & Stromso, 2013). Hence, self-efficacy becomes especially critical in the performance of complex tasks demanding mastery of specific abilities and possibly lacking adequate conditions of motivation (Miñano & Castejón, 2011). Reading comprehension might serve as an example (Lopes, Madalena, Moniz, Spear-Swerling, & Zibulsky, 2015).

The complex process of reading comprehension is often described on the basis of two levels of processing (Retelsdorf, Köller, & Möller, 2011). The first level would incorporate abilities related to recognition and access to the meanings of words and reading speed. The second level involves linguistic and semantic abilities allowing access to the overall sense of the text and a representation of the information described in it, by means of an integration of details extracted from the text with the reader's prior knowledge and aims (Kintsch & Rawson, 2005). Kintsch describes these as two types of interdependent processes underlying overall reading comprehension (Kintsch & Rawson, 2005). These authors differentiate between processes of a low cognitive level, involved in the recognition or identification of the written word, also termed *micro-processes*, and those of a higher cognitive level, related to a deeper understanding of the text, called *macro-processes*. The latter involve a semantic analysis of the text or *textbase* and determining the sense of the text in itself, and a deeper level of representation, the *situation model*. This occurs only to the extent that the reader undertakes an effort of recall and construction of representation, combining explicit textual information with prior knowledge, aims, interests and beliefs (Cano, García, Justicia, & García-Berbén, 2014; Llorens & Cerdán, 2012). Comprehension is a complex process that requires the reader to understand ideas in each cycle, to connect information from successive cycles, to build up macro-ideas and to regulate the whole process. Thus, as pointed out by Vidal-Abarca et al. (2007), an evaluation of this should concentrate on items or questions that represent the various mental processes activated in comprehending the text.

In parallel with what is suggested for assessing reading comprehension, it would seem neces-

sary to consider in any evaluation of reading self-efficacy the different levels demanded by the task. This is because, as stated by Bandura (1977), beliefs about self-efficacy may vary in respect of different portions of the activity and the levels that the task requires in a given situation, and in different circumstances. Bandura (2006) proposed that self-efficacy should be evaluated by focussing on factors having an impact in the domain of functioning, using scales that had clear and explicit items that would reflect pupils' opinions about their capacity to undertake the different levels required by the task. Despite this, most research into self-efficacy has nonetheless been based on global items that do not represent the abilities demanded by the specific task (de la Fuente, Sander, & Putwain, 2013). On these lines, the present study attempted to remedy the limitations of previous research by approaching the evaluation of reading self-efficacy from a multi-factor viewpoint, following Kintsch's theoretical model of reading comprehension (Kintsch & Rawson, 2005) and the indications made by Bandura (2006). The aim was to obtain data on differences in beliefs about self-efficacy in the various school years and as a function of gender, seeing them in the light of the different dimensions of reading comprehension and keeping in mind the complexity of the reading process. This would allow some light to be shed on the role of self-efficacy in the way in which reading competence is acquired, and critical moments in this process of acquisition of reading to be detected.

Prior measures of reading self-efficacy

In the past, beliefs about self-efficacy have been assessed in relation to general self-perceptions about reading, which does not follow the guidelines offered by Bandura (2006) for such evaluations. These general measures have been included in motivational questionnaires like the *Motivation for Reading Questionnaire-MRQ* (Wigfield & Guthrie, 1997), or the *Adolescent Motivation to Read Profile-AMRP* (Kelley & Decker, 2009). These contain items relating to general assessments as a reader linked more to self-concept (*I am a good reader*), concentrated on social comparisons (*I learn more from reading than most students in the class)* or are related to expectations (*I know that I will do well in reading next year*). As Zimmerman stated (2013), it is necessary differentiate beliefs about self-efficacy from other constructs like general beliefs about competence or self-concept. This is because beliefs about self-efficacy are task-specific and established on the basis of standard criteria, whilst the self-concept is more general and is set up through social comparisons (Closas, Sanz, & Ugarte, 2011). Furthermore, Bandura (1997) points out

that this type of general evaluation of self-efficacy has the outcome of becoming a generalized feature of the personality, rather than a specific judgement aimed at a particular context.

As a response to the limitations of these general measurements it is necessary to develop tools for evaluating reading self-efficacy that take into consideration the different processes involved in reading. Thus, it is possible to make reference to more specific instruments, for example the *Reader Self-Perception Scale-RSPS* (Henk & Melnick, 1995), which offers self-perceptions about ability or reading success in relation to elements such as word recognition, word analysis, fluency and general comprehension (*When I am reading I recognize more words than before*). In other cases, perceptions of reading self-efficacy take into account just one dimension of the several involved in comprehension, such as identification of the main ideas in a text *(What is the main idea of the first paragraph?)*, as in Schunk and Rice (1987). Alternatively, as in Anmarkrud and Bräten's (2009) revised version of the MRQ, they assess pupils' beliefs about their capacity to comprehend a text (*It is easy for me to understand the content of a book*), without looking at the various processes involved in reading comprehension. Although these scales evaluate abilities that are fundamental for reading success, they do not consider other aspects that are keys

to a deeper understanding of a text, such as drawing inferences, making predictions, critical thinking, or previous knowledge. Prat-Sala and Redford (2010) when assessing the relationship between self-efficacy in reading and in writing of university students, included key strategies for comprehension, such as picking out the main ideas in a text, synthesizing, underlining, asking oneself questions, or taking notes. However, the results of their work did not offer data for each process separately, which implies a limitation. To sum up, self-efficacy scales must be tailored to domains of activity and assess the multifaceted ways in which beliefs about efficacy operate within the selected domain (Bandura, 2006). However, this was not the line followed in previous studies in the field of reading.

Changes in reading self-efficacy

Beliefs about competence change as schooling proceeds, with a progressive drop in their strength as years go by (Guthrie & Wigfield, 2000). This decline in beliefs about self-efficacy has been explained as a consequence of developmental changes (Lau, 2009a) associated with puberty, as also psychological changes as individuals seek to establish their personal identities, so that they are inclined to change their perceptions of self-efficacy for performing specific tasks. Nonetheless, in the field of reading there is no clear trend in relation to changes

in the level of self-efficacy over the course of schooling. Some studies, such as those conducted by Lau with a sample of students from the fourth to the eleventh year of education (Lau, 2009a) and from the seventh to the eleventh year (Lau, 2009b), or by Kelley and Decker (2009) with students from the sixth to the eighth year, have provided evidence a decline in beliefs about reading self-efficacy among pupils as their schooling progressed. In contrast, other studies, such as those conducted by Mucherah and Yoder (2008) with a sample of students in the sixth to eighth year of education, found an increase in believed reading self-efficacy over the course of schooling.

These contradictory results might be explained on the basis of the tools used in the studies, such as the MRQ or AMRP questionnaires, whose limitations were mentioned above. Hence, further studies are needed, concentrating on the investigation of the specific abilities required by the task of comprehension and covering a wide and representative sample with a good range of ages and stages in education. These would allow a general conclusion to be reached as to differences in reading self-efficacy over the course of schooling.

The role of gender in reading self-efficacy

With regard to this aspect there is a clear trend in the literature (Logan & Johnston, 2010). Several studies have reported a significantly higher level of reading self-efficacy beliefs in girls than in boys (Epçaçan & Epçaçan, 2010; McGeown, Goodwin, Henderson, & Wright, 2012). Nevertheless, the question arises of whether this trend varies over the course of schooling. In studies such as that conducted by Lau (2009a) using a sample of 1,794 students spread over a wide range of school years (from the fourth to the eleventh year), no interaction was observed between gender and school year, a generally higher level of reading self-efficacy being found in girls than in boys. However, whilst girls showed a trend towards a decline in the strength of their beliefs about self-efficacy over the course of schooling, boys in contrast showed a stable level of reading self-efficacy. Nonetheless, once again the instruments used had the limitations noted above, differing in the way in which they measured beliefs about self-efficacy. Whilst some studies assessed general beliefs about reading abilities (Lau, 2009a), or about reading comprehension (Epçaçan & Epçaçan, 2010), others evaluated beliefs about self-efficacy in relation to specific reading abilities, not capturing its full multi-dimensionality (McGeown et al., 2012).

Objective and hypotheses

The proposal was a multi-factor assessment of reading self-efficacy,

making it possible to reflect differences in beliefs about reading self-efficacy better. It was based on a revised theoretical model (Kintsch & Rawson, 2005) and followed the guidelines suggested by Bandura (2006) for assessing self-efficacy. Thus, three dimensions of self-efficacy were distinguished, in accordance with the level of complexity of the abilities required by the comprehension task. Hence, the processes involved in the recognition or identification of written words were kept in mind in order to assess beliefs about self-efficacy in relation to abilities for decoding and verbal fluency, termed *decoding self-efficacy*. Secondly, account was taken of the processes related to the formation of the textbase in assessing beliefs about self-efficacy relating to the representation of the meaning of the text in itself, called *textual self-efficacy*. Finally, the processes entailed in building up a situation model were brought in when assessing beliefs about self-efficacy connected with the formation of a mental model of the situation described in the text, designated *situation self-efficacy*. In addition, these analyses were undertaken from a developmental viewpoint and considering differences between the genders; these are areas of research in which there is no unanimity.

The general aim was to investigate what variations arose in the level of reading self-efficacy over the course of compulsory schooling, taking into consideration its multi-dimensionality. To this end, eight school years were compared, distributed into four cohorts, two of which related to primary education and two to obligatory secondary education. Additionally, possible differences as a function of gender were investigated, as were changes in reading performance as a complement to the main work.

With regard to this objective, the first hypothesis was that there would be an increase in reader performance and reading self-efficacy as academic years passed. The second hypothesis was an expectation that diverse patterns would be noted in the differences between years for each of the dimensions of self-efficacy evaluated (decoding, textual and situational model). This would be a consequence of the level of complexity of reading abilities required by the comprehension task, with a greater increase to be expected in the simpler dimensions (decoding, textual) than in the more complex (situation model). Finally, the third hypothesis was that significant differences would be noted between the genders, favouring girls.

Method

Participants

The sample comprised 1,060 students in full-time education from the third year of primary education, Year 3 (equating to Year Four in the British system, Third Grade in the Amer-

Table1

Sample Distribution by School Year and Gender

Years	Primary Education				Compulsory Secondary Education				Total%
	3	4	5	6	7	8	9	10	
Gender									
Female	35	45	66	76	89	96	69	57	(50.3%)
Male	37	40	70	77	94	93	52	64	(49.7%)
Total for year	72	85	136	153	183	189	121	121	1060
Total for stage			446				614		

ican), to the fourth year of compulsory secondary education, Year 10 (Year Eleven or Tenth Grade equivalent). Their ages ranged from eight to sixteen years. They were from eight schools in the city of Leon in Spain, four of which were State schools and four private with State subsidy. Six were fully urban, and two were more rural, as they lay on the outskirts of the city (see Table 1). The sample excluded any pupils diagnosed as having special educational needs, those whose mother tongue was not Spanish, and those who had failed a year and were repeating it.

Measures

Reading self-efficacy questionnaire

The reading self-efficacy scale proposed by Fidalgo, Arias-Gundín and Olivares (2013) was used. This scale differentiates three dimensions of reading self-efficacy according to the skills involved in the levels of semantic processing, as proposed by Kintsch and Rawson (2005). The first reading self-efficacy dimension, designated *decoding self-efficacy*, included three items and assessed beliefs about self-efficacy concerning the abilities involved in linguistic processing with respect to decoding and reading fluency capacities (for instance, Item 6: *I can correctly read aloud the words in the text*). The second reading self-efficacy dimension, *textual self-efficacy*, included eight items, with which the pupils self-assessed their capacity to build up the textbase for the text successfully; the micro-structure and macro-structure of the text (for instance, Item 5: *I can pick out the main idea among the sentences in a paragraph*). The third dimension of reading self-efficacy, termed *situation self-efficacy*, had three items incorporating pupils' opinions of their ability to build up a mental model of the situation described in the text, integrating information from the text with their

previous knowledge and aims (for instance, Item 3: *I can get knowledge from this text that I can later apply to other situations, readings or tasks*). The scores for the various scales were calculated from the sum of the scores for the items corresponding to them, weighted for the factorial loading for each item.

In this scale pupils responded to fourteen items assessing how sure they were of being able to bring to bear various reading abilities on the reading comprehension task described. For this purpose, the reading task consisted of a text from natural or social sciences, taken from the *Test of Reading Comprehension Strategies* (Vidal-Abarca et al., 2007).

To respond to the questionnaire pupils could use any number on a scale running from 0 to 100, where 0 meant being very sure that they could not do what was asked of them and 100 very sure that they could. In this way, their responses reflected the percentage of certainty of being able to make proper use of the reading abilities described. The scale as a whole showed good internal consistency, with a Cronbach's alpha of .89. For its part, confirmatory factorial analysis produced a solid model with a comparative fit index (CFI) of .971 and a root mean square error of approximation (RMSEA) of 0.05 with a 90% confidence interval of 0.04 to 0.06. There were three factors, in accordance with the three dimensions of reading self-efficacy. Moreover, a composite reliability of .62 was ob-

tained for *decoding self-efficacy*, .89 for *textual*, and .70 for *situation model*, as also an average variance extracted of .35, .47 and .54, for *decoding, textual*, and *situation model self-efficacy*, respectively.

Reading comprehension achievement

In order to measure pupils' reading comprehension performance or achievement in relation to their measure of reading self-efficacy, the *Test of Reading Comprehension Strategies* by Vidal-Abarca et al. (2007) was used. In this test, respondents have to answer ten questions on a text that they read in the form of a multiple-choice test with four options for each question. During the test, which has no time limit, respondents may refer back to the text. The test includes four types of questions which explore comprehension by those individuals tested of explicit ideas, anaphoric inferences, knowledge-based inferences and macro-ideas. The topics of texts were distributed in a balanced way between the genders and groups. In marking them score to be given to the pupil for the test was calculated on the basis of one point for a correct answer and no points if it was incorrect. Hence, the maximum score for the test was ten points and the minimum zero points. According to previous studies (Vidal-Abarca et al., 2007), this test has an appropriate level of reliability (Cronbach's alpha = .798).

Procedure

As self-efficacy is a specific task-dependent construct, the starting point was an explanation of the reading comprehension task that pupils would be required to perform. After this explanation, respondents filled in the self-efficacy questionnaire and then the reading comprehension test.

Once the tests had been marked and the data codified, statistical analyses were conducted. In these analyses, the variable school year was grouped into four cohorts, corresponding to the four stages into which school years are structured at an educational level, since each stage entails a specific instructional to teaching. Thus, the four cohorts distinguished were: Cohort 1 (third and fourth years of primary school, termed 3-4 grade), Cohort 2 (fifth and sixth primary, termed 5-6 grade), Cohort 3 (first and second years of obligatory secondary education, termed 7-8 grade) and Cohort 4 (third and fourth years of secondary, termed 9-10 grade).

Results

Differences in reading self-efficacy over the course of schooling

The results of the multivariate analyses of variance (MANOVAs) of reading self-efficacy measures showed a significant effect from school year on all reading self-efficacy measures (see Table 2). Pairwise comparisons between adjacent

Table 2

Statistically Significant Differences in Measures of Reading Self-Efficacy and Reading Achievement in School Years

|	Primary Education		Secondary Education				
	3rd–4th Grades $n = 157$	5th–6th Grades $n = 279$	7th–8th Grades $n = 292$	9th–10th Grades $n = 241$	F	p	μ^2
	M(SD)	*M(SD)*	*M(SD)*	*M(SD)*			
Reading Self-efficacy measures							
Decoding self-efficacy	130(40.5)	141(36.0)	141(35.0)	148(28.2)	3.965	< .001	.03
Textual self-efficacy	369(97.3)	413(89.1)	404(81.8)	420(82.2)	3.965	< .001	.04
Situation self-efficacy	118(28.4)	121(27.4)	105(31.3)	107(26.4)	3.965	< .001	.06
Reading Achievement measures							
Anaphoric inferences	1.17(0.80)	1.55(0.82)	1.77(0.80)	2.30(0.48)	82.77	< .001	.20
Macro-ideas	1.01(0.81)	1.34(0.93)	1.54(0.84)	2.05(0.69)	56.82	< .001	.15
Knowledge-based inferences	0.23(0.27)	0.34(0.30)	0.42(0.31)	0.62(0.28)	68.18	< .001	.17
Explicit ideas	0.31(0.24)	0.40(0.24)	0.46(0.23)	0.56(0.19)	42.99	< .001	.12
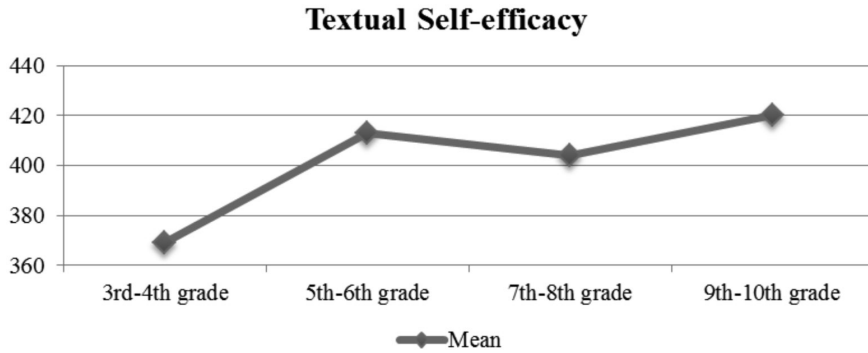
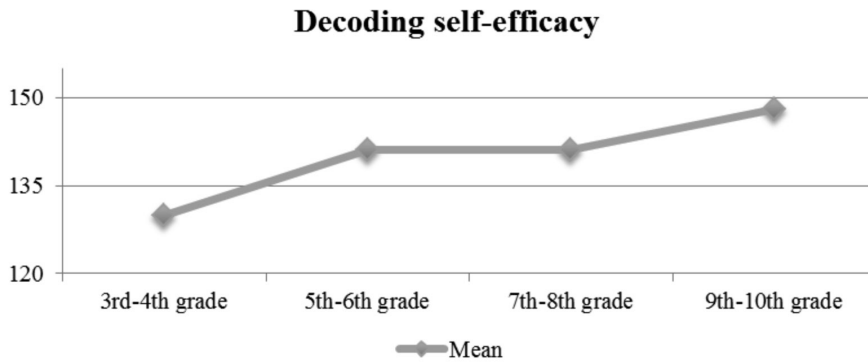*Figure 1.* Differences in decoding self-efficacy by school year.

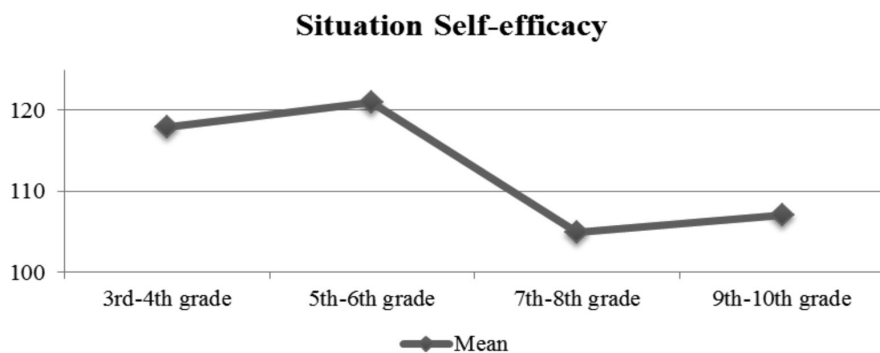*Figure 2.* Differences in textual self-efficacy by school year.

Figure 3. Differences in situation self-efficacy by school year.

cohorts, with a Bonferroni correction to control for family-wise error rate (alpha < .05) did not show the same trend in the three reading self-efficacy measures over the course of schooling.

The *decoding self-efficacy* contrasts showed an increase between Cohort 1 (3-4 grades) and Cohort 2 (5-6 grades) [$t(434) = 4.87$, $p < .001$]. There was a stationary period from Cohort 2 (5-6 grades) to Cohort 3 (7-8 grades), followed by a further increase Cohort 3 (7-8 grades) to Cohort 4 (9-10 grades) [$t(530) = 2.76$, $p < .006$]. (see Figure 1).

In *textual self-efficacy*, a marginally significant increase was found between Cohort 1 (3-4 grades) and Cohort 2 (5-6 grades) [$t(434) = 4.87$, $p < .001$]. There was a stationary period between Cohort 2 (5-6 grades) and Cohort 3 (7-8 grades), and a marginally significant increase between Cohort 3 (7-8 grades) and Cohort 4 (9-10 grades) [$t(531) = 2.15$, $p = .032$] (see Figure 2).

In respect of situation self-efficacy, no statistically significant differences were found between Cohort 1 (3-4 grades) and Cohort 2 (5-6 grades). There was a significant decrease between Cohort 2 (5-6 grades) and Cohort 3 (7-8 grades) [$t(564) = 6.20$, $p < .001$]. Finally, there was a stationary period without changes between Cohort 3 (7-8 grades) and Cohort 4 (9-10 grades), as may be seen from Figure 3.

Differences in reading achievement over the course of schooling

Multivariate analyses of variance (MANOVAs) were performed to analyse the changes of reading achievement over the course of schooling. A significant effect from the school year was found for all reading achievement measures. The effects of the cohort were unpacked by making pair-wise comparisons between adjacent cohorts, with a Bonferroni correction to control for family-wise error rate (alpha < .05), as shown in see Table 2.

Pupils' reading comprehension achievements showed statistically significant growth over the course of schooling in relation to the four dimensions assessed. In respect of anaphoric inferences there were increases from 3-4 grades to 5-6 grades [$t(434) = 4.71$, $p < .001$], from 5-6 grades to 7-8 grades [$t(569) = 3.18$, $p = .002$], and from 7-8 grades to 9-10 grades [$t(531) = 9.41$, $p < .001$]. With regard to macro-ideas increases occurred from 3-4 grades to 5-6 grades [$t(434) = 3.64$, $p < .001$], from 5-6 grades to 7-8 grades [$t(569) = 2.74$, $p = .006$], and from 7-8 grades to 9-10 grades [$t(530) = 7.68$, $p < .001$]. As for knowledge-based inferences, these showed increases from 3-4 grades to 5-6 grades [$t(434) = 4.04$ $p < .001$], from 5-6 grades to 7-8 grades [$t(568) = 2.99$, $p = .003$], and from 7-8 grades to 9-10 grades [$t(530) = 8.01$, $p < .001$]. In rela-

Table 3

Descriptive Statistics of Reading Self-efficacy and Reading Achievement by School Year and Genders

	Primary Education				Secondary Education			
	3rd-4th Grades $n = 157$		5th-6th Grades $n = 279$		7th-8th Grades $n = 292$		9th-10th Grades $n = 241$	
	Male M(SD)	Female M(SD)	Male M(SD)	Female M(SD)	Male M(SD)	Female M(SD)	Male M(SD)	Female M(SD)
Reading self-efficacy measures								
Decoding self-efficacy	132.06 (38.07)	127.47 (42.75)	137.93 (37.72)	144.72 (33.88)	142.68 (33.51)	138.45 (36.60)	147.66 (27.94)	148.73 (28.57)
Textual self-efficacy	377.65 (85.65)	360.05 (107.16)	412.86 (90.64)	414.08 (87.87)	411.38 (75.19)	396.37 (87.99)	427.53 (84.24)	412.08 (79.82)
Situational self-efficacy	118.73 (26.76)	116.93 (30.00)	120.86 (26.74)	120.46 (28.21)	106.51 (28.60)	104.20 (34.12)	110.35 (26.63)	103.27 (25.84)
Reading comprehension measures								
Anaphoric inferences	1.21 (0.82)	1.13 (0.80)	1.54 (0.85)	1.57 (0.79)	1.82 (0.78)	1.71 (0.81)	2.30 (0.44)	2.30 (0.52)
Macro-ideas	1.09 (0.84)	0.94 (0.79)	1.24 (0.87)	1.44 (0.98)	1.52 (0.84)	1.57 (0.85)	2.05 (0.68)	2.05 (0.71)
Inferences based of knowledge	0.23 (0.27)	0.22 (0.27)	0.36 (0.30)	0.33 (0.31)	0.43 (0.30)	0.40 (0.32)	0.61 (0.29)	0.64 (0.27)
Explicit ideas	0.31 (0.22)	0.32 (0.26)	0.39 (0.25)	0.42 (0.22)	0.47 (0.23)	0.44 (0.23)	0.57 (0.18)	0.55 (0.20)

tion to explicit ideas there were increases from 3-4 grades to 5-6 grades [$t(434) = 3.87, p < .001$], from 5-6 grades to 7-8 grades [$t(569) = 2.62, p = .009$], and from 7-8 grades to 9-10 grades [$t(530) = 5.82, p < .001$].

Differences between the genders in reading self-efficacy

Multivariate analyses of variance (MANOVAs) were performed to investigate differences between the genders in reading self-efficacy and their relationship with academic years (see Table 3). In respect of reading self-efficacy there was no significant interaction between gender and the school year. The only significant effect of gender was found in textual self-efficacy ($F = 4.16; p = .042; \mu^2 = .004$), with a slightly higher level of textual self-efficacy in boys than girls. However, subsequent pair-wise comparisons for each school year cohort did not show any statistically

significant differences between the sexes.

Relationship between reading achievement and reading self-efficacy

To investigate the relationship between reading self-efficacy and reading achievement, an overall score for achievement was calculated as the sum of the different scores for reading comprehension. The correlation between this score for reading performance and the various dimensions of reading self-efficacy over the course of schooling was then analysed. As can be seen from Table 4, the results showed that in the early years (Years 3 & 4) no statistically significant correlation between measures of reading self-efficacy and reading achievement could be observed. In all subsequent school years, the three measures of reading self-efficacy correlated posi-

tively with pupils' reading achievement, and a slight increase in the correlation index being visible in the final years.

Discussion

The aim of the present study was to investigate differences occurring in reading self-efficacy over the course of schooling and as a function of gender. This took into consideration the multi-dimensionality of self-efficacy as an outcome of the dimensions involved in reading comprehension. The purpose was to respond to the limitations found in the field of study of reading self-efficacy, a consequence of the restricted nature of the assessment instruments used in previous works.

With regard to differences in reading self-efficacy over the course of schooling, there was partial con-

Table 4

Correlations between Reading Self-Efficacy and Reading Achievement by School Year

	Reading Comprehension Total			
	3rd-4th Grades	5th-6th Grades	7th-8th Grades	9th-10th Grades
Decoding Self-efficacy	.035	.242**	.176**	.253**
Textual Self-efficacy	.134	.239**	.228**	.291**
Situation Self-efficacy	−.019	.137*	.185**	.236**

* $p < .05$.   ** $p < .01$.

firmation of the first hypothesis posed. Whilst the reading performance of pupils improved significantly as they progressed through school years, the same was not true of their self-efficacy. Differences in reading self-efficacy were not generalized over all school years, nor did they occur in the same way in all the different dimensions of reading self-efficacy. Rather, the pattern of differences varied in accordance with the level of complexity of the reading abilities involved, which corroborates the second hypothesis put forward. Thus, the trend shown by the two dimensions of reading self-efficacy that had a lower level of complexity, *decoding* and *textual self-efficacy* was to increase over the course of schooling. This effect was interrupted only during the transition from 5th-6th grades to 7th-8th grades, which coincides with the movement from the primary to the secondary stage of education. In contrast, *situation self-efficacy*, the dimension related to skills demanding a higher cognitive level and involving processes which require pupils not only to be able to understand what the text explicitly contains, but also to integrate this information with their own prior knowledge and goals as readers, did not increase significantly over the course of schooling. Indeed, a statistically significant decrease was observed, once again during the transition from primary to secondary education.

These two patterns of change coincide in suggesting that the switch between stages in education might constitute a critical period for reading self-efficacy, as indicated in previous research (Guthrie & Wigfield, 2000). This trend towards a decline in self-efficacy, or at least the absence of any progressive increase in it, might be a response to the shifting context of the school environment. Secondary education is more impersonal, more competitive and more focused on assessment. Reading tasks become more complex. These changes combine with less scaffolding or help from teachers in the task of reading, which shifts from being a taught subject to being a tool for learning. All these features may exert a negative influence on pupils' personal beliefs about their reading self-efficacy, and trigger a decrease in interest and motivation, and a failure to persist in the face of difficulties that would imply a low level of cognitive commitment and self-regulation by pupils in the task of reading (Zimmerman, 2013). For these reasons secondary-school teachers should not remain unaware of the key role that reading self-efficacy has in pupils' cognitive, affective and behavioural commitments to their task. They should link specific teaching for reading comprehension to the modulating role in the effects of instruction that self-efficacy might be playing with regard to the reading performance of secondary pupils.

Moreover, in relation to the second hypothesis in the study, the results also suggested a differential pattern of development according to the dimension of reading self-efficacy that was assessed, hence confirming the hypothesis put forward. In those dimensions of self-efficacy relating to the less complex reading skills, that is *decoding* and *textual self-efficacy*, an increase was observed over the course of schooling, except during the critical period described above. However, the same pattern of increases was not found in the dimension of *situation self-efficacy*, which entails more complex skills requiring pupils to engage in a very effortful process of constructing meaning, making high demands on their resources and entailing conscious and self-regulated control (Kintsch & Rawson, 2005). Thus, the greater cognitive demands involved in the construction of a situation model for a text, and perhaps previous negative outcomes in learning from a text, might exert a negative influence on pupils' situation self-efficacy. At the same time, these negative beliefs about self-efficacy would result in less engagement at the behavioural, motivational and cognitive levels of the task, and this would have a negative impact on the achievement of a deeper understanding of the text. Consequently, teachers should promote a meta-cognitive knowledge of reading, helping students to understand the different demands of a task and promoting cognitive and

self-regulated strategies that would facilitate the high level of cognitive processing involved in reading (Ripoll & Aguado, 2014), capacities linked to true comprehension and demanding greater cognitive effort.

With regard to the role of gender in reading self-efficacy, contrary to expectations no significant differences were found between the genders over the course of schooling. One possible explanation for this unexpected result might be associated with the type of measure used to assess reading self-efficacy. It is possible that many of the instruments employed in previous studies may not have handled reading self-efficacy in accordance with the guidelines established by Bandura (2006). Rather, they referred to other different constructs like self-concept, expectations, or general beliefs, and not specific beliefs linked to a given type of task, which might explain the differences in the results obtained.

Lastly, in respect of the findings concerning the relationship between reading self-efficacy and reading achievement, the results indicate that pupils in the earlier years displayed wrongly calibrated beliefs about reading self-efficacy, whilst there was a trend towards more accurately calibrated self-efficacy beliefs in later school years. It might be that younger pupils have less self-awareness about the task, and a lack of knowledge of the meta-cognitive processes in reading, which might favour the growth of some-

what unrealistic beliefs about their competence as readers. This is a very important aspect for consideration by teachers, as an over-estimate in pupils' beliefs might affect their performance (Bandura, 1997). Great self-confidence in one's reading competence is not enough to ensure success. On the contrary, it may be negative if the needful reading abilities are not really present, as might happen with younger pupils. At the same time, a low level of belief in self-efficacy in reading, even when the necessary reading abilities are present, might lead to negative thinking with an impact upon behaviour, reducing interest in, and motivation for, reading, cognitive effort and self-regulation in the task (Zimmerman, 2013). According to Bandura (1997), a certain degree of optimism or positive bias in student calibration would be the key.

In short, the results of the present study suggest that there are several critical periods in the development of reading self-efficacy throughout schooling, and that these are associated either with the early years of primary education or the transition to secondary education. However, caution should be exercised when interpreting developmental trends in reading self-efficacy, owing to the limitations of the cross-sectional design implemented. Possible lines of research to be followed might study changes in reading self-efficacy on the basis of longitudinal designs. It would also be of interest to consider the

study of reading self-efficacy in specific tasks linked to given fields of knowledge, such as history or science texts, or the like, this being an aspect that would hitherto not appear to have been addressed. Furthermore, another limitation of the study that must be mentioned arises from the relatively low values for the reliability and average variance extracted for the three sub-scales for self-efficacy, especially the sub-scale for self-efficacy in decoding, in which the interval for average variance extracted lay below .5. This suggests considerable random error in responses, which could well be due to the age of those participating. This fact may have affected the results obtained. However, it does not appear probable, because, while random error does reduce the power, it does not increase the probability of Type 1 errors (for example, it would not explain the statistically significant effects discovered in the study). The sample was large, which makes up for a lack of power, and in turn statistically significant effects were obtained for the three sub-scales of self-efficacy, including decoding. Hence, it is true that the relatively low values for composite reliability and for the average variance extracted in this scale do constitute a limitation suggesting the need for a review of the measurement of efficacy. Nevertheless, while these might suggest a future line of research to be pursued, they cannot explain away the effects found in this study.

In conclusion, from the perspective of application to education, teachers should be conscious of the key role of self-efficacy in learning and mastering reading and achievement (Mizumoto, 2012). Thus, not merely mastery or competence in reading should be encourages, but also an optimal level of reading self-efficacy that will facilitate learning. All this is coherent with current focuses in the field of teaching, in which explicit instruction in cognitive, meta-cognitive and motivational strategies are combined with the teaching of planning, monitoring and evaluation of learning (Spörer & Schunemann, 2014).

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Fátima Olivares is research collaborator of the University of León. Psychology and Educational Sciences PhD. Psychology and Educational Sciences Research Master. Educational Psychology Degree. Her research interest is focused on reading self-efficacy.

Raquel Fidalgo, Psychology and Educational Sciences PhD. Senior Lecturer of the Area of Developmental and Educational Psychology at the University of León. Her research interests is focused around the role of variables like metacognition, self-efficacy, self-regulation on reading comprehension and writing composition.

Mark Torrance is Senior Lecturer in Psychology at Nottingham Trent University (UK) and also currently Adjunct Research Professor in the National Reading Centre, University of Stavanger, Norway. His research focusses on the educational and cognitive psychology of text production.