Articles

THE RESPONSE TO INTERVENTION MODEL IN WRITING: A REVIEW OF ASSESSMENT MEASURES AND INSTRUCTIONAL PRACTICES

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La evidencia científica sitúa el modelo de Respuesta a la Intervención como el enfoque clave para la prevención y diagnóstico de las Dificultades de Aprendizaje Específicas en Escritura. La formación del psicólogo educativo en torno a la instrucción en competencia escrita y la monitorización del progreso del alumnado resulta fundamental para desarrollar su labor de orientación al profesorado en la aplicación eficiente de dicho modelo. En este estudio se presenta una revisión internacional de las dos dimensiones clave del modelo: las medidas de evaluación de las habilidades escritoras sensibles al cambio y las prácticas instruccionales empíricamente validadas para la mejora de la competencia escrita. A partir de la revisión de 34 artículos, se analizan la idoneidad de las medidas y tareas de evaluación a utilizar y se discuten las prácticas instruccionales eficaces según el proceso cognitivo de la escritura en el que se focalizan: ortografía, caligrafía o procesos cognitivo de orden superior.
Palabras clave: *Prevención, Dificultades de aprendizaje, Escritura, Respuesta a la intervención, Evaluación de la escritura, Instrucción en escritura.*

Scientific evidence points to the Response to Intervention Model as a key approach to the identification and prevention of learning disabilities in writing. In order to guide teachers in the successful implementation of this model, educational psychologists need to receive training in writing instruction and how to monitor students' progress. In this study, we present an international literature review on the two key dimensions of the model: writing assessment measures that are sensitive to change and empirically validated instructional practices to improve writing competence. Based on the 33 papers reviewed, we analyze the suitability of assessment measures and tasks and discuss several instructional practices according to their focus in a specific writing cognitive process: spelling, handwriting, and high-level cognitive processes.
Key words: *Prevention, Learning disabilities, Writing, Response to intervention, Writing assessment, Writing instruction.*

Learning difficulties (LD) are among the educational support needs with a high school prevalence, close to 10%, both internationally (Altarac & Saroha, 2007; Mogasale, Patil, Patil, & Mogasale, 2012) and nationally (Jiménez, Guzmán, Rodríguez, & Artiles, 2009).

In Spain, the educational treatment of LD experienced significant progress after 2006, when the Organic Law of Education (see Fidalgo & Robledo, 2010) was passed. LD in this law were recognized as a diagnostic category in special education. Since then, a restricted conceptualization of them has been assumed, which understands LD as specific problems that arise unexpectedly in the acquisition of reading, writing and/or mathematics, without there being any other

disabling condition causing them, and that persist despite receiving appropriate instruction (APA, 2013). This conception has been endorsed in subsequent regulatory developments (LOMCE, 2013), assuming the preventive principle of LD as well as the implementation of reinforcement mechanisms as soon as they are detected. This measure is consistent with the Response to Intervention model in force internationally in the field of LD (hereafter RtI, Response to Intervention Model) (Fletcher & Vaughn, 2009, Jiménez, 2019). The National Center on Response to Intervention (NCRTI) defines this model as "a multilevel prevention system, which maximizes student performance by integrating assessment and early intervention within the school system." Thus, the model places its emphasis on the early prevention of LD through action in two complementary dimensions: evaluation and intervention. With regard to evaluation, the model advocates, first, for the use of measures whose validity and reliability has been demonstrated, which facilitates the early identification of students at risk of LD. In addition, the emphasis is on the use of change-sensitive measures that enable us to constantly monitor student progress through periodic assessments that determine their response to the intervention. The use of appropriate evaluation measures allows decisions to be made about the intensity and frequency

of the intervention each student receives. Within the intervention dimension, the use of empirically validated instructional practices is emphasized to ensure that the presence of LD is not due to inadequate instruction. Initially, students receive preventive instruction at the classroom level, implemented by the tutor (level 1). Those who do not respond adequately to this measure are referred to level 2, where the intervention, more intense and frequent, is applied in small groups. If the lack of response persists, a third level of intervention will be applied, individualized, and focused on the areas where there are specific difficulties. Meta-analytic studies indicate that the combination of these two dimensions of assessment and intervention significantly reduces the diagnosis of LD (Burns, Appleton, & Stehouwer, 2005), with an effect size of 1.07 being obtained for this model (Hattie, 2012, 2015).

The effective application of this model demands great responsibility of the teaching staff, who frequently mention not having the necessary training for its implementation (Castro-Villarreal, Rodriguez, & Moore, 2014; Wilcox, Murakami-Ramalho, & Urick, 2013). In this sense, the educational psychologist plays a key role in providing advice, guidance, and supervision of educational agents in specific actions for attention to diversity (Campos i Alemani, 1995; Farrell, 2009). In the field of the prevention of LD, the counseling function of the educational psychologist must stem from a deep mastery of the principles of the RtI model, in order to meet the empirical validity requirement of assessment and instruction (Jiménez, 2019). However, at the scientific level, research around this model has been linked almost exclusively to the field of reading or mathematics difficulties (Balu et al., 2015; Jimerson, Burns, & Vanderheyden, 2015; O'Connor, Sanchez, & Kim, 2017; Zhou, Dufrene, Mercer, Olmi, & Tingstom, 2019). Research in writing, meanwhile, has been conducted separately from the RtI model, both in the assessment and instructional dimensions. To our knowledge, only the study by Saddler and Asaro-Saddler (2013) and the chapter by Gil and Jiménez (2019) have addressed the RtI model in the field of writing. However, they only provide general guidelines for assessment and instruction or present specific writing evaluation instruments designed and validated by the authors (Gil & Jiménez, 2019). Therefore, within the assessment dimension, despite having analyzed writing measures in isolation, there is a lack of systematic reviews on the evaluation measures that can be used within the framework proposed by the RtI model based on two criteria: compliance of the psychometric properties of validity and reliability; and sensitivity not only for the identification of students at risk, but also for monitoring their progress. As for the instructional dimension, writing involves the activation of high and low level cognitive processes (Hayes & Flower, 1980). In this sense, research shows that writing instruction is more effective if it combines both processes (Limpo &

Alves, 2017). Meta-analyses, however, have addressed the efficacy of instructional practices separately, either in high-level processes (Graham & Harris, 2018; Graham, McKeown, Kiuhara, & Harris, 2012) or in transcription skills (Hoy, Egan, & Feder, 2011; Wanzek et al., 2006). Therefore, in order to fulfill the premise of effective writing instruction established by the RtI model (Jiménez, 2019), it is necessary to have systematic reviews that synthesize the empirically validated instructional practices for the instruction on each of these processes, offering a global vision of the guidelines for teaching writing.

For all these reasons, based on the two dimensions presented, an empirical review has been carried out at the international level in order to pursue a double objective. First, it is intended to analyze the evaluation measures that allow us to detect students at risk of LD in writing and to monitor their learning progress, complying with the premises of the RtI model. The second objective is to analyze instructional practices that can be used within the framework established by the RtI model, since they focus on the different cognitive processes of writing and empirical evidence on their effectiveness for improving written competence have been found.

METHOD
Search and selection procedure

The search for sources of information was conducted in English using Google Scholar and ERIC as databases, and was differentiated according to the dimensions of the RtI model presented. Only studies available in full text were used and no time limit was established for the publication dates.

For the evaluation measures, the search started with general terms such as: "writing assessment review" or "progress monitoring + writing", and later specified by using terms such as: "holistic/analytic scoring/CBM writing + review" or "rubrics + writing assessment." The paucity of meta-analyses and systematic reviews forced us to expand the search to empirical studies on the validity of these measures, adding "validity" and "reliability" to previous searches.

For instructional practices, the search was restricted to meta-analyses and systematic reviews, in which various experimental studies focusing on the validation of instructional practices in writing are synthesized and compared, presenting a classification of practices according to their efficacy. Differentiated searches were performed according to the cognitive process of writing to be enhanced. Within the transcription processes, terms such as "meta-analysis/review spelling/handwriting", "spelling/handwriting instruction", or "teaching spelling/handwriting" were used. For higher order processes, meta-analyses were sought on effective instructional practices in written composition with terms such as "writing instruction meta-analysis/review", "effective instructional/teaching practices + writing". From these, the instructional approaches used to enhance higher order processes were selected.

In each search, all entries directly related to the field of study were reviewed, which generally involved a review of the first two pages of results in each database. After the searches, the articles to be reviewed were selected by reading the title, summary, objective, and method of the study. In the assessment dimension, the selection criteria were: a) reviews, critical reflections, or empirical studies; b) focus on school-aged students (infants, primary, or secondary); c) providing data on the validity and/or reliability of the measures presented; and d) providing a description of the writing tasks associated with these measures. According to these criteria, 22 articles were included (4 reviews, 1 meta-analysis, and 17 empirical studies). On the other hand, in the instructional dimension, the criteria used were: a) systematic reviews or meta-analysis; b) including only effective instructional practices in writing; c) presenting a detailed description of each practice with data on its efficacy; d) and covering applied practices with students of school age.

According to these criteria, 12 documents were included (6 meta-analyses and 6 systematic reviews). Figure 1 represents the process of searching and selecting sources.

Analysis procedure

In relation to assessment measures, after the articles were selected, they were grouped into four types, according to the type of measure presented: assessment of the legibility of letters, holistic approaches, analytical approaches, and curriculum-based measures. The main advantages and disadvantages were extracted from each type of measure. Subsequently, each empirical article was analyzed based on: the measures and tasks used, the age of the students, and findings about their validity and reliability (See Table 1 for a synthesis of results).

In relation to instructional practices, the selected articles were classified according to the cognitive process of writing

FIGURA 1
PROCEDIMIENTO DE BÚSQUEDA Y SELECCIÓN DE FUENTES
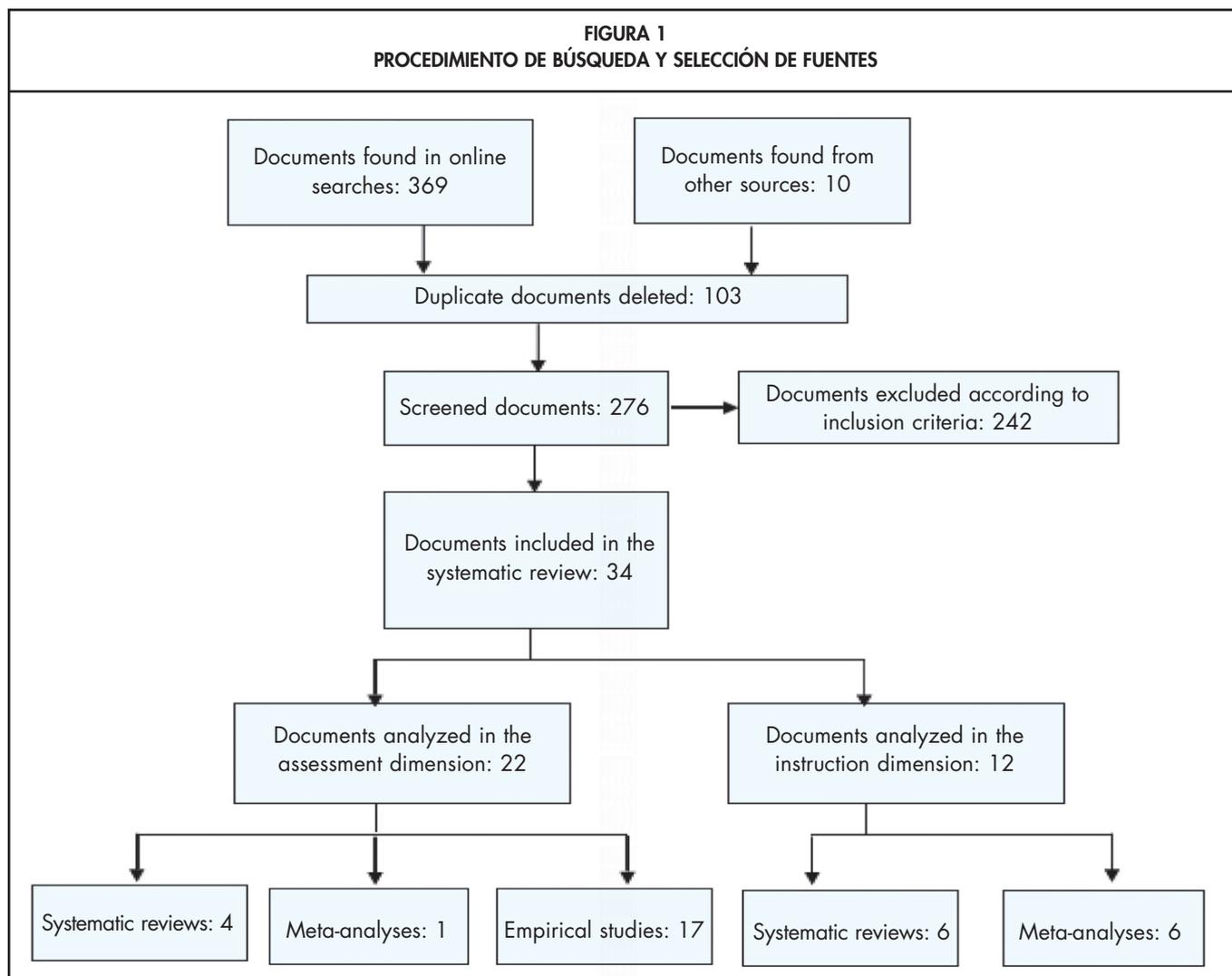
on which they focused. Specifically, the various theoretical models (Berninger & Winn, 2006; Hayes & Flower, 1980) differentiate between spelling processes, handwriting processes, and skills in planning and revising a text. For each of these types, instructional practices whose efficacy has been empirically demonstrated were analyzed, presenting a comparison of results obtained in the different empirical studies (See Table 2).

RESULTS

The results presented below are grouped according to the specific dimension of the RtI model: assessment or instruction.

Assessment Measures Results

From the empirical review carried out, it is possible to conclude that there are few measures of writing evaluation that allow to monitor student progress in writing skills. These, in turn, can be differentiated according to their complexity, as follows: measures that assess only the legibility of letters or measures centered on words, sentences, or texts, among which there are holistic approaches, analytical approaches, and curriculum-based measures.

The former are based on counting the letters that the student correctly reproduces in alphabet-copying or alphabet-writing tasks. This measure is especially valid at early ages (Ritchey,

TABLE 1
ASSESSMENT MEASURES FOR WRITTEN COMPOSITION

Measure	Positive aspects	Limitations	Aspects assessed	Writing tasks	Examples
Holistic approaches (see Hamp-Lyons, 2016 for critical insight)	✔ Easy application and low cost. ✔ Useful for large-scale assessment. ✔ High reliability with previous training of the evaluators.	✔ Difficulty of use at an early age due to short text length. ✔ Low validity for detecting differences between educational levels and typologies of students. ✔ Does not enable the detection of specific areas where there are difficulties.	Holistic text quality scales.	Spontaneous text writing based on a prompt.	Subtest of Written English-Test TOEFL (Pierce, 1991)
Analytical approaches (see Jonsson & Svingby, 2007 for review)	✔ Acceptable reliability for assessment at the classroom level. ✔ Enable the detection of deficiencies and potentialities in different components of writing. ✔ Transparent and specific evaluation. ✔ Potential for instructional decision making.	✔ Insufficient research on its psychometric properties. ✔ Contradictory results on its validity. ✔ Low reliability in large-scale evaluations. ✔ Laborious correction. ✔ Difficulty in progress monitoring.	Specific scales for different dimensions of the text (e.g., ideas, organization, text tone, vocabulary, cohesion, and conventions).	Spontaneous text writing based on a prompt.	Lloyd-Jones, (1977) Primary Trait Scale (Spandel, 2008) Dunsmuir et al., (2015)
Curriculum-based measures: Productivity Indices (Deno, 1985; McMaster & Espin, 2007; Romig et al., 2016)	✔ Validity and reliability of correctly written words and correct word sequences in primary and secondary. ✔ Moderate to high correlation with standardized tests. ✔ Sensitivity to growth, especially correctly written words and correct word sequences. ✔ Correlation with qualitative measures.	✔ Validity of the total words written and the correct letter sequences only at the beginning of primary education. ✔ Scarce research regarding punctuation marks: some validity in the middle of primary.	✔ Total words written. ✔ Words written correctly. ✔ Correct word sequences. ✔ Punctuation marks.	Copying and dictation (effective in first levels). Spontaneous text writing based on a prompt (effective at all levels). Narrative texts in primary school and expository texts in secondary.	Coker & Ritchey, (2010); Costa, Hooper, McBee, Anderson & Yerby, (2012); Dockrell, Conelly, Walter & Critten, (2015); Espin, De la Paz, Scierka & Roelofs, (2005); Espin et al., (2008); Gansle et al., (2004); Hampton & Lembke, (2016); Jewell & Malecki, (2005); McMaster, Xiaoqing & Pétursdóttir, (2009); McMaster et al., (2011); McMaster & Campbell, (2008).
Curriculum-based measures: Precision indices (see review Deno, 1985; McMaster & Espin, 2007)	✔ Greater validity than productivity indexes in the detection of LD in writing. ✔ High growth-sensitivity of percentage of words written correctly and correct minus incorrect word sequences.	✔ Percentage of correctly written words only valid at the beginning of primary education. ✔ Correct minus incorrect word sequences: high reliability coefficients only from 3rd grade primary onwards and in secondary education.	✔ Percentages derived from productivity indices. ✔ Correct minus incorrect word sequences.	Copying and dictation (effective in first levels). Spontaneous text writing based on a prompt (effective at all levels). Narrative texts in primary and expositive in secondary.	Costa et al., (2012); Dockrell et al., (2015); Espin et al., (2005); Espin et al., (2008); Hampton & Lembke, (2016); Jewell & Malecki, (2005); McMaster et al., (2009); McMaster & Campbell, (2008).

2008). The Process Assessment of the Learner (Berninger, 2001) includes an example of this.

However, the assessment of written competence requires more complex measures to evaluate words, sentences, or texts. Among them, there are holistic approaches, analytical approaches, and curriculum-based measures. The first two focus on the assessment of the written composition quality. However, while holistic approaches enable the establishing of a global judgment of the final text, analytical approaches evaluate the quality of different dimensions of the written composition (ideas, organization, vocabulary, etc.). Nevertheless, despite being useful in the detection of at-risk students, none of these approaches is sensitive to growth, which prevents the monitoring of student progress (Hamp-Lyons, 2016; Jonsson & Svingby, 2007). As an alternative, curriculum-based measures (CBM) are reliable, effective

indexes, easy to understand and administer, sensitive to change, and valid for instructional decision making (Deno, 1985; Romig, Therrien, & Lloyd, 2016). Within these, productivity and accuracy indicators can be assessed. The former evaluate the fluency of writing by counting the total words written, the number of words written correctly, correct word or letter sequences, and punctuation marks. The accuracy indices, meanwhile, evaluate the adequacy of the text regardless of productivity, through the calculation of percentages of correctly written words, correct word sequences, and correct minus incorrect word sequences. Both indices are obtained from tasks that are very quick to apply (3-5 minutes in primary school and 7-10 minutes in secondary) and therefore lend themselves to being used frequently to monitor student progress. Since the psychometric properties of these indices began to be analyzed, numerous studies have used them in the assessment of written proficiency at the school level (see Romig et al., 2016 for a meta-analysis).

Table 1 shows a summary of the advantages and disadvantages of the measures indicated and the writing tasks that allow these measures to be taken, presenting several studies that analyze their validity.

Instructional Practices Results

The review carried out demonstrates that effective instructional practices in written composition focus on the three key cognitive processes of writing: spelling, handwriting, and planning and revising skills. Instructional practices for instruction on each of these processes have been extracted from the reviewed meta-analysis (see Table 2).

Instructional practices focused on spelling processes

From the empirical review carried out it can be established that formal spelling instruction significantly improves spelling, although its effects on global quality are questioned (Graham & Santangelo, 2014). Within this dimension, eleven effective instructional practices have been identified, divided into three blocks: instructional techniques carried out by the instructor, techniques applied independently by students, and multisensory training (see Table 2). Recent studies that focus on spelling improvement use the techniques described below (Alves, Limpo, & Fidalgo, 2016; Cordewener, Verhoeven, & Bosman, 2016).

Within the techniques applied by the instructor, seven empirically validated instructional practices were identified. The first one, modeling, is based on the observation of a model that reproduces and corrects frequent spelling errors. The correction must occur immediately after writing each word (Graham, 1999; Mushinski & Stormont-Spurgin, 1995).

Another effective practice identified is the use of immediate *reinforcement* after practice, for example, reinforcements

TABLE 2
EFFECTIVE INSTRUCTIONAL PRACTICES IN WRITTEN COMPOSITION

Cognitive process	Practices	Meta-analyses/ reviews
Spelling	✔ Techniques applied by the teacher/instructor • Modelling • Positive reinforcement • Goal setting • Analogies. • Distributed practice. • Word lists. • Constant delay of time. ✔ Techniques applied independently by the student • Peer tutoring. • Systematic study of spelling strategies. • Self-regulation. ✔ Multisensory training	Graham (1999) Mushinski & Stormont-Spurgin (1995) Wanzek et al., (2006) Williams et al., (2017)
Handwriting	✔ Modeling ✔ Positive reinforcement ✔ Self-regulation ✔ Self-assessment ✔ Training in motor patterns ✔ Relaxation	Graham & Weintraub (1996) Hoy et al.(2011) Santangelo & Graham (2016)
Planning and revising	✔ Self-regulated strategy-focused instruction: • *Direct instruction of the strategy (examples of strategies):* ✔ POW (Harris, Graham, & Adkins, 2015) ✔ POD (Torrance et al., 2015) ✔ OAIUE (Fidalgo et al., 2008) ✔ CDO (Arias-Gundín & García, 2007; Paz, Swanson, & Graham, 1998) ✔ LEA (Fidalgo et al., 2008; Torrance et al., 2015) • *Modelling* • *Independent practice* ✔ Structure of the text (examples of acronyms). • Narrative texts: ✔ WWW (Harris et al., 2015) • Discursive texts: ✔ TREE (Harris et al., 2012) ✔ TARE (López et al., 2017)	Graham & Harris (2018) Graham, Harris, & McKeown (2014) Graham, McKeown, Kiuhara, & Harris (2012) Graham & Perin (2007) Koster, Tribushinina, de Jong, & van den Bergh (2015).

based on making spelling work public. This is especially effective if combined with other practices. One of them is *goal setting (Graham, 1999), establishing aims* around the number of words whose spelling must be mastered at the end of each week. Few studies have applied reinforcement in isolation (Wanzek et al., 2006).

Another effective instructional practice at the spelling level is the use of *analogies* with words with complex and similar spelling patterns, through rhymes (Mushinski & Stormont-Spurgin, 1995) or word families (Wanzek et al., 2006).

Distributed practice or practicing spelling in several weekly sessions has also been effective. This consists of gradually incorporating new words and eliminating those already assimilated (Graham, 1999).

Another effective practice is the memorization of lists with a *variable number of words*, reduced in the case of students with spelling difficulties (Graham, 1999), as an effective instructional practice (Mushinski & Stormont-Spurgin, 1995).

Finally, the *constant delay of time*, that is, the progressive increase in the response time given to the student when writing a word (Mushinski & Stormont-Spurgin, 1995; Wanzek et al., 2006) has also shown instructional effectiveness.

On the other hand, within the techniques applied independently by the student, from the review carried out it is possible to identify three instructional practices of proven effectiveness. Firstly, *peer tutoring*, in which one student acts as the tutor dictating and correcting words, and the other takes the role of trainee (Graham, 1999; Wanzek et al., 2006; Williams, Walker, Vaughn, & Wanzek, 2017). Another effective practice is the *systematic study of spelling strategies* (Mushinski & Stormont-Spurgin, 1995; Wanzek et al., 2006; Williams et al., 2017). This, according to Graham (1999), consists of: pronouncing the word, writing it, naming its letters while writing, tracing the word, and visualizing it with closed eyes. The third effective instructional practice covers *self-regulation of attention and productivity* (Mushinski & Stormont-Spurgin, 1995; Graham, 1999). The former involves periodically interrupting students while they write a list of words and asking them to indicate if they were thinking about the task when the interruption occurred. Self-regulation of productivity involves counting the times you practice a word until you manage to write it correctly.

Finally, the third block of effective techniques to improve spelling derived from the review carried out involves *multisensory techniques*, which stimulate spelling learning through different senses. Some of them include spelling words in sign language, tracing letters with the finger, or speaking words out loud at the same time as writing them (Mushinski & Stormont-Spurgin, 1995).

Instructional practices focused on handwriting processes

Handwriting instruction includes letter name and shape, writing fluency, and the position of the pencil and paper (Graham, 1999). From the review carried out, it has been empirically confirmed that formal instruction improves the readability, fluency, length, and overall quality of the texts (Santangelo & Graham, 2016). Specifically, six instructional practices in handwriting have proved effective (see Table 2), many of them being used in recent literature (Graham, Harris, & Adkins, 2018; Limpo, Parente, & Alves, 2018; Wolf, Abbott, & Berninger, 2017)

The first is *modeling*, where the instructor writes the letters in front of the class for the students to observe the order and direction of the stroke. In early childhood education and the first grades of primary, this is effective in combination with verbal instructions, while from 3rd grade onwards observation alone improves readability and fluency (Graham & Weintraub, 1996; Hoy et al., 2011). Alternative models are the use of letters with numbers and arrows to guide the stroke, although these are less effective (Graham & Weintraub, 1996; Santangelo & Graham, 2016).

Another practice is *positive reinforcement*, preferably verbal, immediately after the student completes the writing. This has certain effects on legibility, although it may have negative effects if it is not provided equally to all students (Graham & Weintraub, 1996).

Also noted is *self-regulation,* indicated by students giving themselves instructions out loud to guide their tracing of the letters. These verbalizations can refer to the steps to follow in the motor execution or to the name of the letter, syllable or word written. With young students there are certain effects on legibility and fluency, although it is difficult for them to verbalize the process (Graham & Weintraub, 1996; Hoy at al., 2011). From the middle of primary school age onwards, verbalizations decrease fluency (Graham & Weintraub, 1996).

Another noteworthy technique is *self-assessment*, in which the student issues a judgment on the legibility of the letters written in copy tasks. For this, checklists are used or the correct and incorrect letters are identified by comparing them with the model, with any incorrect letters being repeated. Graham and Weintraub (1996) state that this practice improves legibility, although recent meta-analyses have not found significant effects (Santangelo & Graham, 2016)

Training in motor patterns, meanwhile, corresponds to the tracing of sub-letter forms. In contrast with its positive effects on legibility and fluidity indicated by Graham and Weintraub (1996), recent meta-analyses question its effectiveness (Santangelo & Graham, 2016).

Finally, the efficacy of *relaxation* through audios or biofeedback-electromyogram has been studied, a technique that warns the student of their biological responses, urging them to control them. It is usually combined with explicit handwriting instruction, and it is, therefore, impossible to determine whether its effects are really due to relaxation (Graham & Weintraub, 1996; Hoy et al., 2011).

Instructional practices focused on higher order cognitive processes: planning and revising

Based on the different meta-analyses that evaluate effective instructional practices in writing, the ones that effectively promote the processes of planning and revising have been extracted: self-regulated strategy-focused instruction and textual structure. Additionally, various techniques are presented that, while not constituting instructional practices, offer support for student writing.

Self-regulated strategy-focused instruction. This practice covers the teaching of planning and revising strategies. Recent meta-analyses (Graham & Harris, 2018; Graham et al., 2012; Graham & Perin, 2007) point to this as the most effective practice in improving text quality from the first grades of primary onwards, in students with and without difficulties. This practice is operationalized in the self-regulated strategy development model (Graham, Harris, & McKeown, 2014). This model begins by providing students with the prior knowledge necessary to use the strategy (the importance of writing and the definition of the process to be practiced). Next, the instructor describes the strategy by associating it with a mnemonic rule that facilitates its memorization (e.g., TOD = Think, Organize and Develop the text, Fidalgo & Torrance, 2018). Here, explicit declarative knowledge is provided about the meaning of the strategy, its purpose, and its benefits. Table 2 shows examples of strategies. Third, the instructor models the use of the strategy by providing procedural knowledge on how to apply it. To do this, he or she plans or revises a text in front of the class, describing how the strategy is used during the process. Subsequently, students memorize the strategy using the previous knowledge. The instructor supports the mastery of the strategy through scaffolding and the progressive withdrawal of support. Finally, students apply the strategy independently. Numerous studies have validated the efficacy of self-regulated strategy-focused instruction both in planning (Fidalgo, Torrance, Rijlaarsdam, Van den Bergh, & Álvarez, 2015; Fidalgo, Torrance, & Robledo, 2011; López, Torrance, Rijlaarsdam, & Fidalgo, 2017; Torrance, Fidalgo, & Robledo, 2015) and revising (Arias-Gundín & García, 2007; Fidalgo, Torrance, & García, 2008; Torrance et al., 2015).

Text structure

This practice is based on the systematic instruction of the structural elements of various text genres, allowing the planning and revising of the text according to its structure. Several meta-analyses indicate its effectiveness in primary school (Graham et al., 2012; Koster, Tribushinina, de Jong, & van den Bergh, 2015), although this decreases in the higher grades (Graham & Harris, 2018; Graham & Perin, 2007). In this practice, the instructor describes the meaning of acronyms that represent text structure (see Table 2 for examples of acronyms). Often, this practice is combined with the previous one, so that not only are planning and revising strategies described and modeled, but also rules that help students to memorize the structure of the text.

Previous practices include explicit instruction on higher order processes. However, within them, complementary support for student writing can be used, such as: *approaches based on the writing process*, which create routines for planning, writing, and revising texts within writing tasks where the student receives individualized support (Graham & Sandmel, 2011); *collaborative practice* with peers (Graham et al., 2012; Graham & Perin, 2007); *goal setting* prior to planning or revising the text, whether these are objectives related to textual product (Graham & Harris, 2018; Graham et al., 2012), process (Koster et al., 2015), or productivity (Rogers & Graham, 2008); *observation of exemplary text models*, high quality texts whose characteristics the students attempt to reproduce in their writing (Graham & Harris, 2018; Graham & Perin, 2007); and *research*, or observation of real situations, the data from which the student uses to generate ideas about the content of his or her text (Graham & Harris, 2018; Graham & Perin, 2007).

DISCUSSION

In response to the principles of the RtI model regarding assessment and instruction in written competence for the prevention of LD, the work of teachers and their advice and guidance by the educational psychologist must be based on scientific knowledge. On this basis, the conclusions of the review are presented and discussed around the two proposed objectives.

The first objective focused on analyzing the writing assessment measures that can be used within the framework established by the RtI model. Our study has revealed a lack of meta-analytical or review studies on assessment measures of the written composition, despite the existence of numerous empirical studies that validate these measures. In general, this review suggests that CBMs are the ones that best meet the demands of the RtI model, since their sensitivity to growth makes them ideal for monitoring student progress. Likewise, their speed of application and correction, as well as their high reliability and validity, facilitates their use compared to other measures in large-scale evaluations (McMaster & Espin, 2007). However, from the review carried out, it is possible to conclude that not all measures are valid for the evaluation of all aspects of the textual composition. Thus, it is suggested that correct letter writing makes it possible to evaluate handwriting aspects while CBMs fundamentally evaluate productivity (e.g. number of written words), spelling accuracy (e.g., words spelled correctly), and grammar (e.g., correct minus incorrect word sequences). Holistic and analytical indices, meanwhile, allow the assessment of more complex aspects related to the coherence, structure, and overall quality of the text. This supports previous research that points to the combined use of different evaluation measures, combining quantitative and qualitative evaluation and providing a more accurate

description of writing skills (Ritchey & Coker, 2014). On the other hand, in relation to CBMs, this review suggests that their appropriate use requires adapting them to the age of the students. Thus, productivity rates are especially effective with younger students (Hampton & Lembke, 2016; McMaster et al., 2011) and accuracy rates with students in the last grades of primary school and teenagers (Espin et al., 2005; Espin et al., 2008). Finally, based on the literature reviewed, it is possible to conclude that all the evaluation measures presented can be used with various types of students. In fact, only one of the studies carried out exclusively involved students at risk of developing LD in writing (Costa et al., 2012), while the rest include a heterogeneous sample with a percentage of students receiving special education services.

The second objective focused on analyzing instructional practices in writing that comply with the premise of empirical validation of their effectiveness proposed by the RtI model. In this sense, instruction must be linked to the three cognitive processes of writing. The review suggests that practices focused on spelling and handwriting processes have been validated mainly with students in the first levels of primary education, compared to the validation of practices linked to planning and revising processes with older students (in our country Fidalgo et al., 2015; Fidalgo et al., 2011; López et al., 2017). This is consistent with the line of research that supports instruction in higher order processes once spelling and handwriting skills have been automatized (Fayol, 1999), since it is not until the intermediate educational levels that planning and revising determine the text quality in a significant way (Limpo & Alves, 2013; Limpo, Alves, & Connelly, 2017). However, recent studies suggest the efficacy of combined instruction in lower and higher order processes from the beginning of primary education (Arrimada, Torrance, & Fidalgo, 2018). Finally, the studies reviewed seem to indicate that analogies and the study of strategies are the most effective instructional practices in spelling (Mushinski & Stormont-Spurgin, 1995; Wanzek et al., 2006). As for handwriting instruction, modeling is suggested to be the most effective practice (Hoy et al., 2011). Self-regulated strategy-focused instruction, on the other hand, is particularly effective for instruction on planning and revising texts (Graham, et al., 2012).

This study, however, presents certain limitations derived mainly from its nature as a review, which must be taken into account. First, as regards the assessment dimension, only measures related to textual product have been included. In recent years, however, there has been some interest in assessing the writing process, through online measures such as pause and execution analysis (Olive, Alves, & Castro, 2009), thinking out loud (Armengol, 2007; López, Torrance, & Fidalgo, 2019), or the triple task (Fidalgo, Torrance, Arias-Gundín, & Martínez-Cocó, 2014). However, to our knowledge, the validity of the online measures for monitoring progress has not yet been analyzed and, therefore, its effectiveness within the RtI model is unknown. Future studies should address this gap. Secondly, regarding the instructional dimension, meta-analyses focused on transcription processes analyze, almost exclusively, studies carried out on students with LD in writing or at risk of presenting these difficulties. Therefore, it is difficult to present conclusive data regarding the effectiveness of these practices with other types of students. However, given the preventive nature of the RtI model and its application with students at risk, it seems pertinent to review practices of this type.

In conclusion, consistent with the dominant international approach in the field of the prevention of LD, the adoption of the RtI model is an imperative necessity. In this context, the work of the educational psychologist is essential, as he or she is responsible for guiding teachers in the principles and implementation of the model in the academic areas in which LD can occur. In turn, scientific research will provide the psychologist with the tools and training necessary to carry out this work; hence the importance of empirical reviews such as the one presented here, aimed at advancing the application of the RtI model in the prevention of LD in writing in our country.

CONFLICT OF INTERESTS

There is no conflict of interests.

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