Children's plans for writing: their characteristics and impact on writing performance

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Abstract

Planning plays an important role in the production of children's written texts. Yet little is known about why children plan and the plans they create when they are not explicitly instructed in planning activities. The current study explores the plans that elementary school children create before writing a text. We compared performance of children educated in Catalan and in English (UK) to capture contextual differences and examined whether the plans children produced were related to their language and reading skills. We captured developmental differences by examining performance in Years 1, 3 and 5. Children of all ages in elementary school produced plans before writing either by producing a draft of the text or generating content and structure in the form of organisers. The types of plan produced changed with age and was influenced by the children's educational context. These plans were not associated with either the length or the quality of the children's written text. Nor were language, reading and transcription skills associated with the plans produced. However, plans differed significantly across educational contexts. The results indicate that school instruction is important for the production of plans and , at this stage in development, children's self generated plans do not impact on the texts produced.

Key words: writing, reading development, planning, teaching instruction

Understanding the factors that underpin children's writing development continues to raise challenges for researchers (Graham, 2018) and practitioners (Limpo & Alves, 2018). The complexity of the writing process, itself, and the diverse methods used to examine children's writing products often leads to studies that focus on the written product and in the initial stages of writing, at least, transcription skills (Berninger, Yates, Cartwright, Rutberg, Remy & Abbott, 1992; Graham, Berninger, Abbott, Abbott, & Whitaker, 1997). Transcription is the means to translate ideas into text (Fayol, Alarmagot, & Berninger, 2012), and, as such, only one component of the writing process. Cognitive models of writing capture three processes in the production of written text – planning, translating and revising (Hayes, 2009). Planning which occurs before the commencement of text production, that is prewriting planning, provides the writer with the opportunity , prior to composing, to generate ideas and organize these ideas.

A key question remains about the ways in which children organize their thoughts prior to engaging in the production of the text itself. Children could prepare for writing in a number of different ways, either individually or in groups. In this study we examine elementary school children's prewriting planning for the production of a text. Children as young as seven produce plans for writing and instruction in planning is reported to promote students' writing performance (Graham, McKeown, Kiuhara, & Harris, 2012). Yet, little is known about the types of plans children produce without explicit guidance in how to plan for a specific piece of writing that is spontaneous planning. Nor do we know whether these spontaneous plans contribute to the writing productivity and the quality of children's written texts and the extent to which the creation of these plans is influenced by children's language, reading and transcription skills. To our knowledge this is the first study to examine the

prewriting plans of children in elementary school across school grades and educational contexts.

Planning for writing

Two types of planning can be distinguished: planning which occurs before writing (prewriting planning) or online planning which occurs during the production of the written text (Berninger & Swanson, 1994). Planning which occurs during translation process, that is online planning, arguably, is not operational until adolescence where young people are more competent and fluent writers and recursive planning and revising can occur online (Olive & Kellogg, 2002). Prewriting planning is promoted in elementary school classrooms, (Alley & Peterson, 2017), although the nature and extent of instruction varies across country contexts (Parr & Jesson, 2016; Torrance, Alamargot, Castello, Ganier, Kruse, Mangen, Tolchinsly & Van vaes, 2012), age (Author, 2016) and classrooms (De la Paz & Graham, 2002) .

Skilled writing has been conceived as a sequence of recursive processes where planning initially informs translation and ideas are translated into written text when reviewing and revising can occur (Hayes & Flower, 1980). Producing plans provides the writer with both the opportunity to generate ideas and structure them to develop the written product (Torrance, Thomas, & Robinson, 1999). Although, the central function of planning is argued to be generating content for the text to be written. Writers prepare their text by extracting information from the task environment and by searching for content in their long-term memory. When necessary, this generated material is (re)organized in a writing plan that guides text production. These prewriting planning activities reduce demands on the writers working memory, thereby providing the writer with greater scope to devote time to translation and transcription resulting in increased writing fluency and higher ratings of text quality (Kellogg, 2008). Prewriting planning in college students has been shown to

consistently improve holistic writing quality (Kellogg 1988, 1990), including both the fluency and the syntactic complexity of the texts produced (Limpo & Alves, 2018).

Early research on children's prewriting planning indicated that children only plan prior to writing for a very short time (De la Paz, 1999), and when children do plan this is typically a draft of the text to be produced (Bereiter & Scardamalia, 1987). More recent research has indicated that typically children do not use the plans they produce (Limpo & Alves, 2013). Nor do these preparatory activities appear to predict text quality (Olinghouse & Graham, 2009; Whitaker, Berninger, Johnston, & Swanson, 1994). However, by 6th grade planning to write, defined as generating ideas and producing a first draft had a direct effect on translation (Koutsoftas & Gray, 2013). Thus, while younger students are able to produce plans, only older students seem to use them to guide text production (Limpo, Alves, & Fidalgo, 2014). To do so often requires explicit instruction, especially for children who struggle to write (Graham & Harris, 2005). Teaching genre related planning strategies is among the most effective ways to promote children's writing (Graham & Perin, 2007). Of course, children may fail to use plans for a number of reasons. One possibility is that younger children may not differentiate the process of planning to write from the process of translating (Bereiter & Scardamalia, 1987). Koutsoftas and Gray (2013) found that while producing an outline had a direct effect on the production of a first draft, there were no subsequent effects on the production of a second revised text. Thus, the type of plan that children produce prior to the production of the written text may be critical in terms of its impact on the writing product.

Preparing to write

Despite the key role assigned to planning for writing in models of writing development (Bereiter & Scardamalia, 1987; Berninger, Whitaker, Feng, Swanson, & Abbott, 1996;

Macarthur & Graham, 1987) there have been few attempts to examine the types of activities that children might engage in prior to writing their texts. Planning before writing can involve, at least, two distinct elements idea generation and organisation. Again, the development of these written artefacts may vary with development but also between children and across tasks. These initial written plans can be examined in a number of ways (see Hayes & Nash, 1996 for a review on planning measures). A number of studies researching planning at primary school level have focused on organization. Outlines and graphic organizers have been considered as the most advanced form of preplanning (Whitaker et al., 1994, Olinghouse et al., 2009, Limpo et al., 2013). The effect of content or idea generation in prewriting planning on text production has been less explored (but see Koutsoftas & Gray, 2013).

In sum planning remains a recommended practice to support text production but unless children receive explicit instruction they appear not to plan. Planning without explicit guidance might occur if the child understands the task demands and uses the opportunity of planning to cognitively engage with the task at hand. As such this likely depends on both the children's understanding of the demands of the writing process and their language, reading and transcription skills. Transcription supports text production and oral language can support idea generation (Author, 2016; Castillo & Tolchinsky, 2018) whereas reading skills could support children's awareness of the type of structure and content that is relevant to the text that is to be produced (Ahmed, Wagner, & Lopez, 2014; Kent & Wanzek, 2016). These within child competencies should, in theory, support prewriting planning independent of the orthography in which children are learning to write.

By contrast engagement in preplanning activities may be driven by instruction, independent of these skills and the language in which the child is learning to write (Torrance

et al., 2012; Torrance & Galbraith, 2006). Currently, what aspects of planning for writing, at which grade level and with how much emphasis or regularity teachers teach children how to plan vary across educational contexts (Graham & Rijlaarsdam, 2016). As Gillespie and Graham (2014) evidenced in their meta-analysis on writing interventions not all practices are equally effective and while explicit instruction on prewriting planning had a significant impact and large size effect on the quality of texts produced by children who struggle to write, the use of other prewriting activities such as completing predetermined concept maps/organisers were not effective.

Skills which underpin the production of written text

A number of frameworks or models exist to conceptualize the development of writing which focus on the interacting components necessary for writing (Berninger & Winn, 2006: Kim & Schatschneider, 2017) or other factors such as, working memory capacity limitations (McCutchen, 2012). Given the significant cognitive demands in text production, young writers may not have the capacity to use or create a plan (Vanderberg & Swanson, 2007). Young writers in the initial stages of learning to write lack efficient management of the cognitive load imposed by low and high level processes (Bereiter & Scardamalia, 1987). Thus, the demands of transcription skills likely impact on translation and this might be the reason that young writers do not plan before they write (Alves, Branco, Castro, & Olive, 2012; Grabowski, 2010; Olive & Kellogg, 2002).

The current study

Planning for writing is thought to be a key component in the process of text production. Plans can support both idea generation and the organisation of the text. However, younger writers struggle with planning and, at this point in development, the production of plans appears not to contribute to text quality. It has also been argued that the increased production of drafts in

younger students' written plans and texts, reflects their inability to differentiate planning from translation (Bereiter & Scardamalia, 1987). The structure of plans contributes to text quality in older children but little is known regarding the contribution of prewriting idea generation across the elementary school years. Here, we examine the structure and content of the prewriting plans produced by children between the ages of six to 11 years to capture developmental changes. We consider whether the nature of the plans children create prior to producing written text is informed by transcription, linguistic or reading skills and the extent to which prewriting planning impacts on writing products above and beyond established predictors of writing. Given the large and significant contribution of transcription skills to children's written texts (Bourdin & Fayol, 1994; Graham, Berninger, Abbott, Aboot & Whitaker, 1997), measures of spelling and handwriting were collected as control variables.

We collected the prewriting plans produced by children in England and Catalonia to address the hypotheses related to differences across languages and educational contexts. The countries differ in the ways in which prewriting planning is included in the curriculum. In England children as young as six are explicitly taught to produce plans for writing. The English national curriculum states that children should consider what they are going to write before beginning by planning what they are going to write about and writing down ideas and/or key words. From the age of seven planning is considered a precursor to drafting. By contrast the Catalan curriculum is much less specific and refers to prewriting planning in a very general fashion through stating that children must "think about what one is going to write about" and only in years 5 and 6, does the curriculum become more specific and suggests that "when planning, children must think of the audience and set the goal and content of the written text to be produced" (Generality of Catalonia, Department of Education, 2009).

This data base allowed us to explore the production of prewriting plans across ages and educational contexts and to examine the transcription, language and reading skills which were associated with the writing plans produced. The extent to which the plans produced were related to child level skills was explored through multinomial logistic regression and using multiple regression we examined whether the plans children produced contributed to their writing products in terms of the quality of the text and the quantity of text produced by the children to a standard writing prompt. The prompt was chosen to encourage a narrative genre which would be familiar to the youngest children in the study, commensurate with the genre of writing typically produced in schools and used successfully in previous research studies in this age range (see as examples Author, 2012; Dunsmuir, Kyriacou, Batuwitage, Hinson, Ingram & O'Sullivan, 2015).

We anticipated that the youngest groups of children, independent of educational context and transcription, language and reading skills would produce skeletal drafts of the text they planned to write. By contrast we anticipated that the older children would use the opportunity to create plans both to structure their texts and as means of generating ideas for inclusion in the texts, but given the much greater emphasis within the English curriculum on a structured approach to writing we anticipated that English children would demonstrate a greater use of preplanning activities at an earlier age that the Catalan children. We anticipated that idea generation would be associated with the child's language skills (Savage, Kozakewich, Genesee, Erdos, & Haigh, 2017) and that prewriting plans which included content would significantly contribute to both the quality and the quantity of the text produced by the children.

Method

Participants

One hundred and ninety-nine elementary school children from England (n = 88) and Catalonia (n = 113) participated in the study. Children were purposely selected to reflect three different mainstream school year groups (1, 3 and 5). For the English cohort, mean age in months was M = 75 SD = 3.96 for the 31 children (15 boys) in Year 1, M = 99 SD = 5.63 for the 27 children (11 boys) in Year 3, and M = 123 SD = 3.48 for the 28 children (18 boys) in Year 5. For the Catalan cohort, mean age in months was M = 82 SD = 3.19 for the 37 children (22 boys) in Year 1, M = 105 SD = 4.65 for the 36 children (16 boys) in Year 3, and M = 128 SD = 3.88 for the 40 children (22 boys) in Year 5. The difference between the mean age of the Catalan and English participants is explained different school entry dates (England September to August, in Catalonia January to December).

Measures

Children were assessed on a range of measures to examine their language, reading transcription and writing skills. All children were assessed in their first language using measures appropriate for the population.

Language measures.

Receptive vocabulary.

English: British Picture Vocabulary Scale (BPVS; Dunn et al., 1997): Children are shown four line drawings and asked to choose the one that best illustrates a word spoken by the assessor: reliability .89; validity with the Expressive One-word Vocabulary test .72.

Catalan: We adapted the Spanish Peabody (adapted by D. Arribas) which has a reliability: .91.

Grammar comprehension.

English: The WIAT II Sentence Comprehension Subscale. Children are asked to point which picture out of a set of four matches a sentence read aloud by the examiner: reliability .82

Catalan: We adapted the PROLEC-R Grammatical Processes for Spanish. As with the English test, children are asked to point which picture out of a set of four matches a sentence read aloud by the examiner: reliability .84.

Measures of transcription.

Handwriting fluency.

Children are asked to write as many alphabet letters as possible in one minute with accuracy (Wagner et al., 2011). Children are asked to write all the alphabet letters in order, using lower case letters. If children finish writing all letters before a minute, they are asked to continue to write starting with "a" again. This task assesses how well children access, retrieve, and write alphabet letter forms automatically.

Dictated spelling.

English: British Abilities Scales II (BAS II); Spelling Scale: This scale provides a number of phonetically regular and irregular words to assess the child's ability to produce correct spellings. Each item is first presented in isolation, then within the context of a sentence, and finally in isolation. The child has to respond by writing the word: reliability .91; validity with Wechsler Objective Reading Dimension (WORD) spelling .63.

Catalan: We used a bespoke task created by (Tolchinsky, in press). participants had to write down the words dictated by the experimenter. Each word was repeated twice before proceeding to the next one. Participants had to write the dictated words on a blank paper they got upon the dictation started. Due to the lack of an updated Catalan word frequency dictionary the target words were selected from the Corpus Cesca; a corpus of written Catalan produced by school

children (Authors, 2012) so as to warrant ecological validity of the task. The selected words were from the same semantic field –food -and the same grammatical category –nouns, and they were controlled for frequency and orthographic difficulty. Each participant had to spell a total of 20 words; four sets of words divided for frequency (high and low) and orthographic difficulty (high and low).

Reading.

Word Level Reading.

English: Test of Word Reading Efficiency (TOWRE; Torgesen et al., 1999): This contains two subtests. The Sight Word Efficiency (SWE) subtest assesses the number of real printed words that can be accurately identified within 45 seconds, and the Phonetic Decoding Efficiency (PDE) subtest measures the number of pronounceable printed non-words that can be accurately decoded within 45 seconds.

Catalan: We adapted the PROLEC-R Lexical Processes, word and pseudoword reading for Spanish: reliability .79. This contains two subtests. The word reading subtest assesses the time that takes a child to accurately read a set of 40 real printed words, and the nonword reading subtest that measures the time it takes a child to accurately decode a list of 40 pronounceable printed non-words.

Reading comprehension.

English: The New Group Reading Test. This is a standardized assessment using a multiple-choice format to assess children's ability to complete sentences and comprehend written passages. It can be administered to groups and its reliability Cronbach's alpha: .90

Catalan: ACL (Avaluació de la Comprensió Lectora). This test comprises a set of 7 texts for each school year. For each text, children are requested to read it individually and then answer a set of multiple choice questions. ACL has been extendedly used in studies on Catalan

reading. It has a reliability of KR-20: .080 to .083. Its validity, assessed as the correlation between the results obtained by a child on ACL and the child's teacher assessment of his/her reading comprehension skills, is of .99.

Writing measures.

All children were asked to produce a written response to the prompt 'What is your ideal house like and why'. The children took 5 min to produce a pre-writing plan, the researcher instructed children to hand in the produced plans. This task is based on the standardized assessment of writing in the Weschler Objective Language Dimensions test (WOLD: Weschler, 2005).

Procedure

Children were assessed as a class group for the writing measures and individually in schools for the language and reading measures over a period of three days. The two first sessions lasted over 50 minutes each and involved the group tasks. The third session took another 50 minutes and involved the individual tasks. The writing prompt used in the analyses was presented to the class on day 2.

To ensure all children were familiar with the writing activity on day 1 children were provided with an opportunity to practice the writing task with a different narrative prompt that has been used in similar studies. These data were not included in the analyses. On day 2, children were asked to produce a written response to the prompt 'What is your ideal house like and why'. The task was not time limited, the researcher had a 50 minutes long class period to explain the children the purpose of the task, hand out the necessary materials and deliver the task prompts. On average, children wrote for 20 minutes and no child requested extra time to finish his or her text once the time the session was over. The researcher instructed the children to take 5 minutes 'to think and plan for their texts in any way they

thought might help them produce a really good text'. To ensure that children's individual approaches to prewriting planning were captured neither the prompt nor the planning sheet contained additional information to assist with generating and structuring content (for a difference between self-directed and guided planning see Whitaker et al., 1994). The second blank sheet was to be used to write down the text. For both cohorts, language teachers were present in the classroom during the task. Ethical approval was secured from the authors institution (ANONYMISED for review). Informed consent from schools and parents was provided prior to any testing.

Transcription and coding of plans and texts

Transcription of plans and texts.

A literal copy of all written outlines and texts was transcribed and entered in a standard format using the Systematic Analysis of Language Transcript conventions (SALT; Miller & Chapman, 2000). SALT allows for the automatic coding of certain text features and also for the creation of codes specifically created for the purpose of the study.

Coding of prewriting plans.

We established a first broad classification of the prewriting plans into drafts of the text to be produced and prewriting plans which were not drafts, which we categorized as an organiser. Drafts were defined as a text like outlines reflecting the final text. By contrast organisers were defined as plans representing the content and structure of the future text in a way that was not text like. All plans were categorised for structure and content.

Structure reflected the way in which content was displayed and organized on the paper sheet. Content reflected the type of linguistic units used to express ideas within the plans. We used the rubric in Box 1 for coding the structure and content of plans.

Box 1:

The structure of plans:

1 *linear plans:* plans where content is displayed in a linear, text-like manner.

2 *structured plans*: plans where content is displayed in a non-linear manner and where the relationship between the content is not shown in any way. Structured plans include drawings, lists, mind maps and other.

3 *hierarchic plans*: plans where content is displayed in a non-linear manner and where the relationship between the content is explicitly shown through indentation, arrows or any other graphic means. Structured plans include complex drawings, lists and mind maps showing information at different levels and other.

The content of plans:

0 for non-linguistic plans: plans where content is expressed without using verbal language, e.g., drawings, symbols and other.

1 for single word plans: plans where content is expressed through single words or short syntagmatic constructions referring to elements of the content and their characteristics

2 for multiword plans: plans where content was expressed with multiword clause like constructions elaborating on elements and their characteristics.

3 for hiperordinate plans: plans that include hiperordinate or similar constructions capturing/encapsulating categories of information through their semantic meaning.

(See examples of each type of plan in Appendix 2).

Coding of written texts

Written texts were coded for productivity and their overall quality. Productivity was computed as the total number of words in each text, a measure that has been widely used as

an indicator of compositional length (Kim, Al Otaiba, Puranik, Folsom, Gruelich & Wagner, 2011; Author, 2004). Words used in the title, when there was one were included in the total. When a child made a word segmentation mistake, we counted the number of intended words. Any deleted or crossed over words were not included in the final total. Quality was scored using a holistically scale derived from the WOLD. We present this scale in Box 2:

Box 2:

0: Unintelligible text or too few words to judge the content of the text or text which was irrelevant to the target prompt

1: Response which included a list of elements or characteristics but did not indicate why this reflected 'why or how this should make a dream house'

2: Included information and indicated why or how this relates to a dream house. Could either be an extensive list with no elaboration or single element or characteristic with some descriptive details about that element or characteristic

3: Ideas (elements or characteristics) are related to each other or to the main idea provides additional descriptive information or detail

4: Generally well written engaging the reader with ideas clearly related to each other with the addition of clarifying descriptive detail

5: Presents a substantial amount of description and varied detail of the topic. The ideas and details are clarified with several descriptions or thorough elaboration

6: Well written and presents clear, organized and developed descriptions of the topic. The ideas and details are clarified and related through the use of effective transitions, resulting in an overall sense of the subject. Effectiveness is enhanced through the use of vivid imagery.

While plans included on occasion verbal language, drawings or both, texts did not include the use of drawing.

Reliability of the measures

For each language and school grade level, a second judge rescored the written products for 20% of the children. For plans, category, structure and content, inter-rater reliability (Cohen's

Kappa) was .90, .87, .81 and .91 .89, .87 respectively for the Catalan and English samples. For the quality score, inter-rater reliability was .82 and .80 for the Catalan and English samples.

Data reduction

Appendix 1 provides details of participants' raw scores on all the language, reading and transcription measures by age and language. Correlation analyses indicated that there were high correlations between the language variables (> .8), reading variables (>.92) and transcription variables (>. 96), controlling for age. We therefore examined whether the measures of oral language, reading and transcription reflected different components for English and Catalan or would best conceptualised as the same factors. The language, reading and transcription measures were factor analyzed using principal component analysis with Varimax (orthogonal) rotation. for each language separately. Our three oral language measures all loaded on to a single factor for both English and Catalan, accounting for 67 and 71 per cent of the variance respectively. A single oral language measure was therefore computed for each language. Similarly, both reading decoding and reading comprehension loaded on a single factor accounting for 83 per cent of the variance in English and 75 per cent of the variance in Catalan. A single reading variable for each language was computed. Finally, we examined whether spelling and handwriting reflected a single measure of transcription. Both measures loaded on a single factor accounting for 83 per cent of the variance in English and 91 per cent of the variance in Catalan. A single transcription variable for each language was computed. All subsequent analyses use language, reading and transcription factors.

Results

The results are presented in three sections. In the first section, using Chi-squared analysis, we describe the plans produced and consider developmental differences and contextual differences. In the second section, we use logistic regression and multinominal logistic to consider whether the nature of children's plans differs in terms of their linguistic, reading or transcription skills each measured by the corresponding factor score. In the final section, using ANOVAS, examined whether children's productivity and text quality varied by the types of plans the children produced..

What do children do when they are asked to prepare for writing

Only one child (Year 1 from Catalonia) failed to produce any plan. Figure 1 provides details of the children's products in terms of the production of a draft or an organiser. As the figure shows, overall, younger children were more likely produce drafts and the difference was significant for both the English children (χ^2 (2, N = 86) = 19.05, p <.001) and the Catalan children (χ^2 (2, N = 112) = 32.38, p <.001). As the figure shows, English children were more likely to use organisers at Year 3 and Catalan children at Year 5. Overall 66 per cent of the English children produced organisers while 45 per cent of the Catalan children did (χ^2 (2, N = 198) = 5.62, p = .02).

Drafts were consistently characterized as linear multiword productions across school year and linguistic context; for this reason, they are not further examined here. By contrast, as shown in Table 1 there was greater diversity in the organisers produced, both in terms of both their structure and content. The structure of organisers gained complexity with school year: While younger writers produced as many linear as structured organisers. For children in Year 5 structured organization was more common and hierarchical organisers, where different levels or information are explicitly displayed, appeared only in this age group. This

increase in complexity by age was significant (χ^2 (4, N = 103) = 18.59, p = .001) and did not differ by linguistic context (χ^2 (2, N = 103) = 1.35, *ns*).

By contrast, the ways in which children expressed content in their organisers differed by context (χ^2 (3, N = 103) = 15.13, p = .002). In English, Year 1 children expressed content in different ways, ranging from non-linguistic to multiword forms. After Year 1, children no longer produced organisers where content was not displayed linguistically and, overall, the use of multiword, clause-like constructions to express content prevailed (χ^2 (6, N = 53) = 15.46, p = .017). In Catalan, we saw less variety and children used single word or short syntagmatic constructions across all school years (χ^2 (6, N = 50) = 4.002, *ns*). The use of superordinate terms was rare even in the oldest children.

Are prewriting products differentiated by children's language reading or transcription skills?

Logistic regression and multinominal logistic regression analyses were conducted to examine whether children's linguistic context and developmental skills contributed to the type of prewriting activities. First, we examined regressions looking at drafting and organising. Age in months was included as a covariate. The final model was significant (χ^2 (5, N = 199) = 49.69, p < .001), with the significant factors being age in months (p = .03) and language context (p = .002). None of the measures of the children's skills were significant in the regression (language p = .72, reading p = .43, transcription p = .12)

Using multinominal logistic regression we explored the contribution of our identified factors to the structure and content of the organisers produced. The model for structure was not significant (χ^2 (10, N = 103) = 16.87, p = .07). By contrast the model for the content of the organisers was significant (χ^2 (15, N = 103) = 34.23, p = .003), context of instruction was

the only significant factor in the regression (p = .002) but not age (p = .20) or the children's skills (language p = .41, reading p = .06, transcription p = .68).

In sum, there was no statistical significant evidence that the children's skills influenced the type of plans they produced, although it should be noted that the reading factor approached significance for the content of organisers (p = .06). The results confirmed our previous findings which did not control for children's skills whereby younger children and children from Catalonia produced more drafts and children expressed content differently by their context of instruction (see Table 2).

Do types of plans differentiate writing productivity and quality?

We next examined whether children's productivity and text quality varied by the types of plans the children produced. We first considered differences between drafts and organisers and then examined the impact of different types of organisers. Children whose prewriting activity was a draft produced fewer words (draft M = 54.27, SD =35; organiser M = 74.26, SD = 40.1). However, ANOVAs controlling for school year group revealed a significant effect of year group (F(1, 198) = 145.59, p < .001, pη2 = .43) but no significant effect of plan type (F(1, 198) = .41, *ns*.). With regard to the quality of scores, children who drafted obtained lower scores (draft M = 1.87, SD = 1.13; organiser M = 2.48, SD = 1.29). However, ANOVAs controlling for school year group showed that the effect of year group was significant (F(1, 198) = 170.832, p < .001, pη2 = .47) but the effect of plan type was not (F(1, 198) = .30, *ns*.)

Examining children who produced organisers only, there were again differences in both the number of words produced and the text quality by structure and content. Means and *SDs* are presented in Table 2. As the table shows there was an increase in both the number of words written and the text quality from linear, structured to hierarchical organisation.

However, ANOVAs examining text length controlling for school year group revealed a significant effect of year group ($F(1, 102) = 60.47$, $p < .001$, $p\eta^2 = .38$) but no significant effect of organisational structure ($F(1, 102) = .01$, *ns*.). A similar pattern was evident for year group for text quality ($F(1, 102) = 74.17$, $p < .001$, $p\eta 2 = .42$) . In this case, however, there was a trend for organisational structure to impact on quality ($F(1, 102) = 2.39$, $p = .1$, $p\eta 2 = .05$).

By contrast both year group and organisational content had a significant impact on both the quantity (Year group $F(1, 102) = 78.52$, $p < .001$, $p\eta^2 = .45$; content ($F(1, 102) = 2.84$, $p = .04$, $p\eta^2 = .08$)) and quality of the children's texts (Year group $F(1, 102) = 111.65$, $p < .001$, $p\eta^2 = .53$; content $F(1, 102) = 5.02$, $p = .003$, $p\eta^2 = .13$). Post hoc tests using age as a covariate indicated that pupils who produced non-linguistic content in preparation to write produced significantly more words in their written texts than those who produced single words (*p*. =.005) and multiword phrases (*p*. =.008). No other comparisons were significant. A similar pattern was evident for the quality of the children's written texts where non-linguistic content in preparation to write produced significantly higher quality texts than single words (*p*. =.001) and multiword phrases (*p*. =.001) but no other comparisons were significant.

Discussion

Given the reported role of planning in children's production of written texts we explored what elementary school children did when they were asked to plan before producing a written text. To capture developmental differences we examined performance in Years 1, 3 and 5. Further, we examined the previously unexplored question of whether prewriting planning is underpinned by the child's skills. We compared performance of children educated in two different educational contexts: a school in Barcelona (Spain) and a school in London (UK) to capture whether children's engagement in prewriting planning is driven by their context of

instruction, independent of the child's skills. Finally, we examined the contribution of prewriting planning activities to the characteristics of the written text.

Consistent with previous studies we found that children can plan if asked to (Olinghouse & Graham, 2009). Virtually all children in our sample were able to do produce some prewriting activity which was relevant to the task when prompted by a general instruction to "think and plan in any way that would help them write a really good text". The products produced could be distinguished by either their draft like quality or by the generation of a non-text like content and organisation. Overall, children produced organisers slightly more than drafts and this was more evident in English (66% of the sample) than in Catalan (45% of the sample). Typically, the youngest children produced drafts, as predicted, and the shift from drafting to organising occurred in Year 3 for the English cohort and Year 5 for the Catalan cohort. This pattern likely reflects the differences in the two teaching systems and reinforces the view that creating prewriting activities to generate content and structure requires explicit instruction. In the English context, the teachers of the youngest pupils did little explicit instruction in planning but by Year 3 this is reported to occur more (Authors, 2016). By contrast, in the Catalan context, Year 1 teachers reported that planning was not included in their writing teaching practices and, although children in year 3 were encouraged to think before writing, explicit and systematic teaching of planning was not in place until Year 5 (Generality of Catalonia, Department of Education, 2009).

Children's drafts followed a standard format whereby they were all text-like, linear products using multiword clauses. By contrast, children produced a wider range of organisers in terms of both structure and content. Change in structure followed a similar pattern across both contexts with an increase of complexity by age. Older children produced more variety in the structure of their organisers, including drawings, lists and simple mind maps.

Additionally, only in Year 5 did we find evidence of hierarchical organisers where different levels of information and the relationship between them was explicitly displayed through arrows or similar graphic mechanisms. Organisers presented variety also in relation to the expression of content. However, while differences were significant across educational contexts there was only a trend by school year indicating a need for further studies with larger samples. English children produced more multiword, clause-like constructions whereas Catalan children produced more instances of organisers where content was expressed by single words or short syntagmatic constructions.

Whether children drafted or organized was not associated with the child's language, reading or transcription skills, further supporting the need for explicit instruction in prewriting planning. which focuses on the characteristics of plans that are goal oriented, support access to and generation of topic related content stored in the long term memory as well as the genre-specific structure requisites of the future text. Our results provide preliminary evidence that explicit instruction on prewriting planning may be beneficial, irrespective of the children's skills and the language they write in. This lack of relation stands in marked contrast to studies which focus on the amount and quality of children's written products (see for example Abbott, Berninger, & Fayol, 2010). By contrast to studies examining which child-level skills underpin the production of written text, no previous attempt has been made to examine the skills underpinning the ability for children to plan. Thus, we further examined if individual language, reading and transcription skills explained the characteristics of children's organisers. We had predicted that language and reading skills would be associated with idea generation, that is content. Age but none of the linguistic factors explained significant differences in drafting or organizing. Of interest is the near significant (p = .06) effect of reading on the content of the children's organisers. Poor reading

comprehension impacts on text level writing, where children with poorer reading comprehension, but age appropriate spelling, produce texts which are more limited and less sophisticated in comparison to age matched peers (Cragg & Nation, 2006). Bidirectional relations between reading and writing exist (Abbott et al., 2010), but recent evidence suggests that reading-to-writing conceptualizations are superior, especially for word and text levels of writing (Ahmed, Wagner, & Lopez, 2014). Thus it may be that more competent readers can generate and translate ideas more fluently to include in their prewriting activities.

Finally, we examined the relationship between children's ability to plan and the length and holistic quality of their written texts. Our results show that children who produced organisers to prepare for writing produced longer and better texts. These results are consistent with previous research which demonstrated that primary school age children make little use of the draft plans they produced. These data suggest that an organiser, as opposed to a draft, may reflect a more advanced ability to differentiate planning from translation. This ability, however, would not be related to the child's level skills and might instead be supported by explicit focus and instruction on this high-level process of writing. It is worth noting that the content of organisers made a significant contribution both to text productivity and quality and that it was precisely organisers where content was expressed non-linguistically that were significantly different. Ideation, that is, access to content from long term memory, can take multiple forms, involving language, images or abstract though (Graham, 2018). A positive effect of using non-linguistic means to support the understanding and learning of linguistically encapsulated content has been shown by Ainsworth and colleagues (2011) (but see Jaeger et al., 2018).

In sum, our results contribute to the evidence that even though young writers have the capacity to plan for writing, the impact of this planning activity on the text, however, is

limited. This further highlights the importance of teaching children how to plan both in terms of structure and content generation. There is mounting evidence that teachers should be encouraged to include the teaching of planning activities even at the early stages of primary school (Graham & Harris, 2003, 2005). Explicit, systematic instruction to enable children to use planning strategies independently and in a consistent way across writing topics or genres can enhance writing performance even in young writers or children who struggle with writing.

The developmental pattern by which children progressively abandon drafting as prototypical planning in favor of organisers reflects the stages at which explicit instruction on planning is introduced at school. If, as shown in other studies, planning efficiently is a skill that is learnt by the child, then it is important that we gain understanding of what types of plan and what aspects of content and structure in plans do contribute effectively to the characteristics of the written text. Our results suggest that some ways of expressing the generated content are more beneficial than others. However, to date, the isolated effects of idea generation remain under researched in contrast with a number of studies examining the effect of outlining (Johnston, 2014).

Limitations of this study

This is the first study to examine the products of prewriting planning across all stages of primary school in two different educational and linguistic contexts and the relation of this products with some of the child linguistic variables predicting compositional writing. There are a number of limitations which should inform future research. Firstly, the sample is of a small size. This has two main implications. It limits the power to detect significant differences between groups on the one hand and is limited to two urban schools and as such

lacks generalizability and the potential to detect school effects (Smagorinsky, 2018). Secondly, teachers were asked if planning was taught at all and all teachers stated compliance with the curriculum guideline. However, no further data were collected about the planning and writing instruction in each educational context. Future research is needed that includes information at this level and examines the impact of the specific educational practices on the characteristics of children's outputs. Thirdly, despite our attempts to avoid explicit instruction in planning children were nonetheless prompted by the researcher to plan to prepare to write good texts and we cannot therefore assume from our results that children would show the same behavior without being explicitly prompted.

The role of children's prewriting planning activities requires further exploration. Studies are needed that include a wider and deeper range of information regarding the characteristics of the classroom as a writing community to see in what conditions cognitive strategies become embedded as procedural knowledge and available for all writing tasks, rather than remaining as activities that are engaged in only in response to prompts administered by the teacher. In addition further research is needed to see the different developmental patterns and contributions of prewriting and online planning.

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