revistafuentes

ISSN: 1575-7072 | e-ISSN: 2172-7775

Páginas: 305-317
Recibido: 2023-01-18
Revisado: 2023-05-18
Aceptado: 2023-05-26
Preprint: 2023-07-31
Publicación Final: 2023-09-01

www.revistascientificas.us.es/index.php/fuentes/index

DOI: https://doi.org/10.12795/revistafuentes.2023.23011

Textisms and the textese: A systematic review

Los textismos y la norma digital: Una revisión sistemática

Olga Fernández-Juliá
Universidad de Sevilla (España)

Alejandro Gómez-Camacho
Universidad de Sevilla (España)

Abstract

The aim of this article is to find out what scientific production exists on digital communication and the use of textisms between 2009 and 2022, which will allow us to identify which are the lines of research most worked on in this field, as well as to find the current state of the question. To this end, the systematic review methodology PRISMA (2021) has been used. After conducting the search and applying the exclusion criteria, a total of 62 articles were finally obtained from two databases: Web of Science and Scopus, after which the results were analysed. First, a quantitative analysis was carried out to find out how the published works were distributed in the selected years, in which journals they appeared the most frequently and to which countries and universities the authors with the most publications on the subject belonged. Second, a qualitative analysis has been carried out on the thematic lines they deal with and possible future lines of research. The results show a great disparity between the different articles, especially those dealing with the relationship between literacy and the use of textisms, which in turn show discrepancies in their conclusions on the relationship between the two variables.

Resumen

El objetivo de este estudio es conocer la producción científica que existe entre los años 2009 y 2022 sobre el uso de textismos en la comunicación digital, lo que permitirá la identificación de cuáles son las líneas de investigación más trabajadas en este ámbito, así como el conocimiento sobre el estado actual de la cuestión. Para ello se ha optado utilizar la metodología de revisiones sistemáticas PRISMA (2021). Tras realizar la búsqueda y aplicar los criterios de exclusión, se ha obtenido una muestra final de 62 artículos a partir de dos bases de datos: Web of Science y Scopus. Posteriormente se ha realizado un análisis de los resultados. En primer lugar, un análisis cuantitativo para conocer cómo se han distribuido estas publicaciones encontradas en los años seleccionados, en qué revistas aparecen con mayor asiduidad y a qué países y universidades pertenecen los autores con más publicaciones sobre la temática. En segundo lugar, se ha realizado un análisis cualitativo sobre las líneas temáticas de las que tratan y posibles futuras líneas de investigación. Los resultados evidencian una gran disparidad entre los distintos artículos destacando los que se ocupan de la relación entre la alfabetización y el uso de textismos, que a su vez muestran discrepancias en sus conclusiones sobre la relación entre ambas variables.

Keywords / Palabras clave

Interpersonal communication, Mobile communication, Writing, Telephone, Bibliographic databases, Electronic media, literacy, handwriting instruction.

Comunicación interpersonal, comunicación móvil, escritura, teléfono, base de datos bibliográfica, medios electrónicos, alfabetización, enseñanza de la escritura

1. Introduction

Mobile phones are part of the daily lives of a significant part of the world's population. According to Statista (2021) 6.259 billion people are smartphone subscribers and this number is expected to continue to rise in the coming years. Consequently, the number of active participants in major social networks is growing, according to the latest data published by Statista (2022). Facebook currently has 2.91 billion active participants, YouTube with 2562 million, WhatsApp with 2000 million and Instagram with 1478 million, being the social networks with the largest number of users worldwide.

Although the number of mobile phone users continues to grow every year, mobile phones started to become a very useful accessory in people's daily lives more than two decades ago. Around 1993, SMS (short messaging service) appeared and became very popular since then and is still popular today in many countries (Yus, 2021, 7). Since the beginning of the 21st century, a very rapid increase of SMS (Short Messaging Service) users started to be observed in the younger generation that did not follow conventional spelling and grammatical rules (Verheijen, 2013, 583).

It is clear that the Internet and the use of mobile phones have affected the way adults and young people communicate (Drouin, 2014, 265). This computer-mediated communication (CMC) language, with its own characteristics, has been referred to as 'Digitalk' (Chalak, 2017, 67), 'textspeak' or 'textese' (Verheijen, 2013, 583). 'Digitalk' or 'textese' is primarily characterised by the use of textisms (Burrell and Beard, 2022, 7), which are defined as intentional discrepancies in the spelling of words and abbreviations used in text messages (Bernicot *et al*., 2014). Also considered textisms are emoticons that are introduced into speech and the repetition of letters, both of which are resources that function as forms of non-verbal communication in digital communication (Nixon and Guajardo, 2022) since, as López (2013, 89) states, this language is characterised by being very close to oral language.

Textisms in English, according to Verheijen (2013), are the use of abbreviations or contractions, phonological abbreviations, acronyms, clippings, or omission of punctuation marks, apostrophes, and capital letters among others.Some examples of textisms in Spanish could be the shortening of words, the omission of punctuation marks, the non-normative use of letters such as *k*, *x*, *w*, or *z*, the emphatic use of capital letters, the creation of new words or the use of foreign words (Gómez Camacho and Gómez del Castillo, 2017). These textisms can be classified into three main groups: phonetic-phonological textisms, lexical-semantic textisms and finally multimodal textisms (Núñez Román *et al*., 2022).

As Drouin (2014, 251) argues, as texting and this new form of writing gained popularity, the media began to instil a certain fear in society about the impact it could have on communication and language in general. This idea has also reached the field of education, with many parents and teachers fearing that their children or students might somehow forget the norms of the standard language as taught at school (Verheijen, 2018, 112; Totanes and Lintao, 2019, 16). Consequently, there is frequent research that not only attempts to describe the new language (Tragant *et al*., 2020), but also asks about the relationship between literacy and the use of textisms in younger speakers (Gómez-Camacho y Gómez del Castillo, 2017; van Dijk *et al*. 2016; Wood *et al*., 2014) and enquires into the perceptions and attitudes towards textisms of various age groups. (Wray, 2015)

Consequently, a literature review of the literature published so far that provides an overview of how the scientific production on digital communication and textisms is evolving is highly relevant for the field of education, as it offers a representation of the use of textisms and their relation to spelling, writing and other literacy skills, among other aspects.

1.1. Objective

The aim of this systematic review is to analyse the worldwide scientific production on textisms and digital standards (textese), in Spanish and English. The aim is to determine in which countries, which authors, and in which journals the most is written on this subject, as well as the lines that have been developed in recent years.

This general objective is specified as follows:

- To analyse how the volume of scientific production is distributed in the years between 2009 and 2022.
- To identify the scientific journals with the highest number of articles published on the subject.
- To find out the most relevant authors who have written on this subject in the last twelve years, as well as the countries and universities they come from, and the impact of their publications.

- To compare the lines of research that have been put forward in the analysis of textisms and the digital norm (textese) and to analyse their evolution over time.

2. Method

A systematic review has been carried out following the guidelines of the PRISMA Declaration (Page *et al.* 2022) with the main objective of finding out how many scientific publications deal with the use of textisms and the digital standard and what their main characteristics are.
First, the eligibility criteria of the publications were determined, and then the information was searched using the Web of Science and Scopus databases as sources. Finally, the search and selection of publications was carried out (González Moreno and Molero Jurado, 2022; López-Meneses *et al.,* 2015).
Given the nature of the data to be processed, it was decided to carry out a quantitative and qualitative analysis (Colás-Bravo and Quintero-Rodríguez, 2023). Specifically, a quantitative analysis of the data has been carried out in order to be able to respond to the objectives set out on the years of publication of articles on the subject, journals with the highest number of publications on the subject, authors, universities, and countries with the highest production. On the other hand, to determine the main trends in scientific production on the subject and its evolution, we opted for a qualitative analysis carried out with the VOSviewer software tool, which allows us to construct and visualise bibliometric networks, obtain the analysis of the concurrence of keywords and their graphical representation, as well as the connection between them and the year of publication.

2.1. Eligibility Criteria

- Exclusion criteria

It was decided to exclude all articles published prior to 2009, as this is the year in which the WhatsApp instant messaging application was created. Another criterion for exclusion was the language of the publication, omitting all publications that were not written in Spanish or English. All conference papers, book chapters, etc. were also excluded. These two criteria were decided on the basis of the reference articles cited in the introduction. Finally, the fourth exclusion criterion was to eliminate those publications that used students with specific educational support needs or language disorders as a sample. All duplicates have also been excluded.

- Inclusion criteria

Only articles that have been written from 2009 to the present have been selected. Second, only publications written exclusively in English or Spanish were selected. Journal articles have been included.

2.2. Sources of information

The sources of information used for this study were two databases: Web Of Science and Scopus, two of the most relevant databases in the field of social sciences. The last time they were consulted to identify the resources was in December 2022.

2.3. Search strategy

In order to answer the objective of this article, three searches were carried out. In the first one, the term "textism" was searched, then "textisms", and finally the term "textese" was searched.

2.4. Publication selection process

To determine whether a study met the inclusion criteria for this review, which had been previously designed, two mechanisms were established depending on the nature of each of the criteria.
Firstly, the filtering tools offered by the Web of Science and Scopus databases were used to eliminate publications prior to 2009, those written in a language other than English or Spanish, and finally those that were not articles.
Secondly, to identify articles that deal with specific educational support needs or language disorders, as well as topics outside the fields of education or linguistics, the researchers read and reviewed the articles.

 DOI: 10.12795/revistafuentes.2023.23011

revistaFuentes

3. Findings

3.1. Selection of studies

After searching for the terms 'textism', 'textisms', and 'textese', 69 publications were found on Web of Science and 84 on Scopus (n=153). In the screening phase, 26 publications were eliminated, 5 of them because they were published before 2009, 4 because they were written in a language other than English or Spanish and 17 because they were not articles. Once this screening was completed, 50 duplicate records were eliminated.
In the eligibility phase, after an in-depth reading of each article, 7 were eliminated because they focused on how digital communication affects people with language disorders or difficulties, as well as other pathologies, and 8 because they were not sufficiently related to the subject of this study, focussing on areas such as computer science or medicine, among others.
The articles were selected and assessed according to the eligibility criteria that were previously designed. Two different methods were used to decide whether an article met the inclusion criteria of the review. Firstly, for the inclusion criteria referring to years, languages, and types of publication, the filters provided by the databases themselves (Web of Science and Scopus) were used. With this first screening, a total of 26 articles were eliminated, leaving 108 to continue the selection process. Secondly, the 50 duplicate records were eliminated. Thirdly, to identify the articles that dealt with specific educational support needs or language disorders and those whose subject matter differed greatly from that of this review (textisms and the digital norm), the 77 articles that remained after all the screening and elimination of duplicates were read in full. After this complete reading, 15 articles were eliminated. Finally, 62 articles were selected and identified for systematic review.
This whole process is reflected in Figure 1.

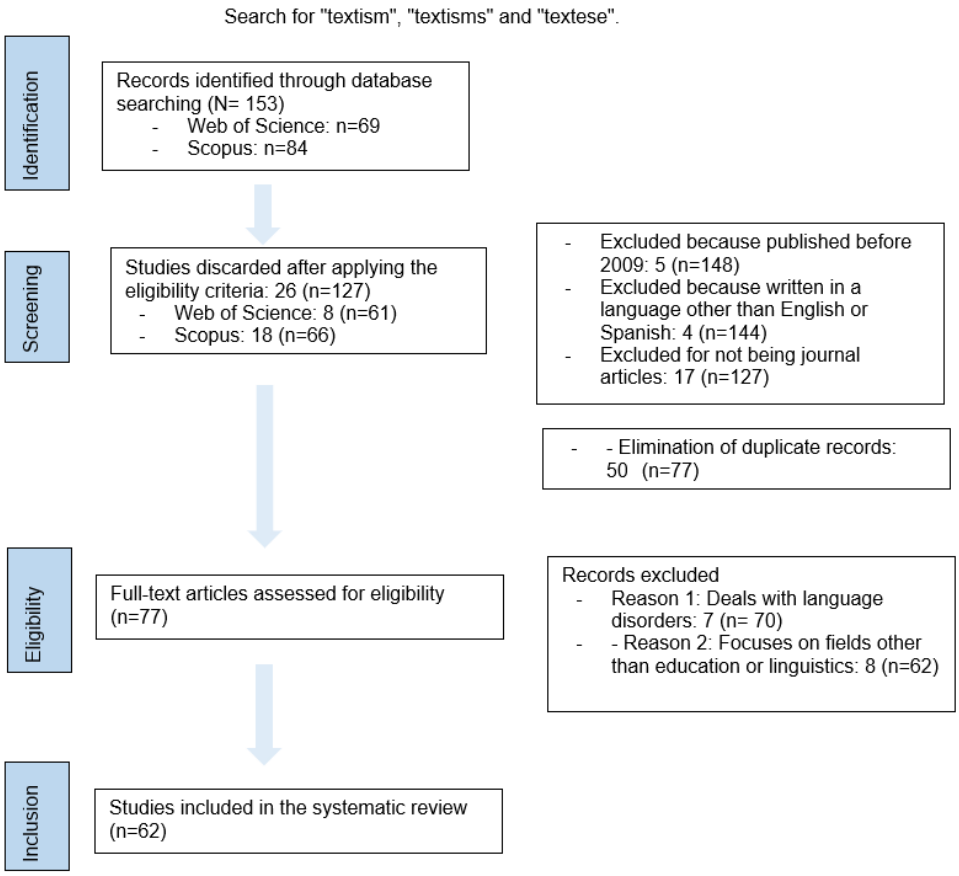

Figure 1. Flow diagram of study selection

3.2. Characteristics of the studies and results of the synthesis

3.2.1. Quantitative data analysis

The scientific production on textisms and the digital norm since 2009 has been distributed as shown in Figure 2. The number of articles published annually is particularly noteworthy in 2011 (n=7), 2014 (n=8) and 2017 (n=7). However, in the last four years: 2019, 2020, 2021 and 2022 we observe a slight decrease in scientific production on this topic. Between 2013 and 2018, more than half of the publications analysed in this review are concentrated (61.29%).

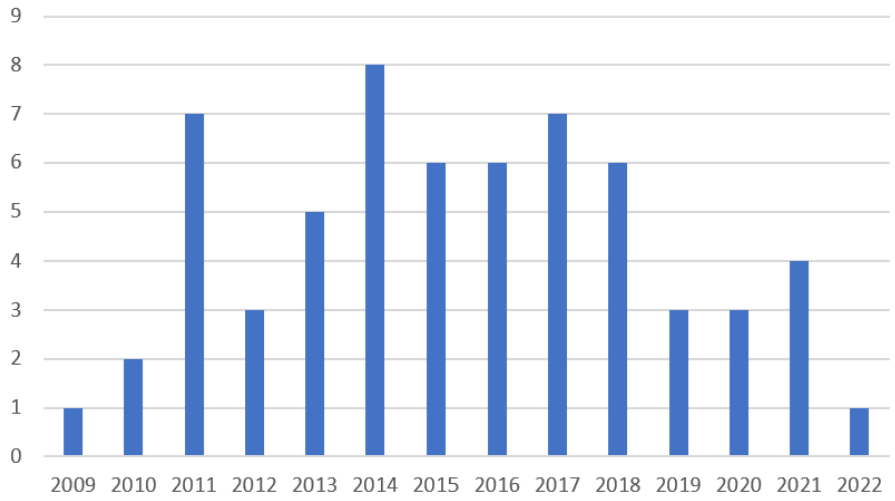

Figure 2. Articles published by year in Web of Science and Scopus on textism and textese

Of the 62 articles that make up the total, 58 were written in English and only 4 in Spanish. This fact should not be confused with the language in which textisms are studied in each of the articles since, although only the articles written in two languages have been selected, these articles deal with digital communication and the use of textisms in a total of thirteen different languages. 61.29% of the articles analysed focus on digital communication and textisms in the English language (Kemp *et al*., 2010; Houghton *et al*., 2018; Al-Kadi and Ahmed, 2018). Second, we find 6 articles, i.e., 9.68% of the total that focus on the study in the Spanish language (Hunt-Gómez *et al*., 2022; Gómez-Camacho *et al.,* 2018) and another 6 articles that focus on French (Jacquet *et al*., 2021; Goumi and Besançon, 2019; Lanchantin *et al*., 2015). Third, we find 3 articles that work on the Dutch language (Verheijen and van Hout, 2022; Van Dijk *et al*., 2016) and 2 that do not focus on any language as they review the use of textisms in general. Finally, we find one article focusing on Singapore English and Singlish (Ong, 2017), one on Afrikaans, English and Isixhosa (Bock, 2013), one on English and Basque (Cenoz and Bereziartua, 2016), one on english and malay (Marzuki, 2013), one on Nigerian (Onanuga, 2017), one on Kerala and finally one focusing on Portuguese (Núñez-Román *et al*., 2022).

The 62 articles finally analysed are spread over a total of 50 journals. In first place, we find the Journal of computer assisted learning, which accounts for six of the articles. It is worth noting that, as can be seen in Table 1, the four journals with the highest number of articles on textism and textese are from the United Kingdom.

Table 1

Analysis of the main journals publishing articles on textism and textese

Name of the journal	No. Of publications	Country of origin	H-Index	Scopus Quartile	JCR Quartile	Areas
Journal of computer assisted learning	6	United Kingdom	98	Q1	Q1	Education
Writing Systems Research	4	United Kingdom	16	Q1		Linguistics and language
Language Matters	3	United Kingdom	12	Q2	Q4	Linguistics

 DOI: 10.12795/revistafuentes.2023.23011

Journal of Research in Reading	2	United Kingdom	53	Q1	Q2	Education
British Journal of developmental psychology	2	United States	82	Q2	Q3	Psychology
PsychNology journal	2	Italy	26			
Reading and Writing	2	Netherlands	80	Q1	Q1	Education

Although scientific production on this subject is very divided between years and journals, in the case of the authors, we find that 69.35% of the articles reviewed were written by nine authors. This shows that there are a number of authors who are highly specialised in these subjects, as shown in Table 2:

Table 2
Analysis of the main authors publishing articles on textism and textese

Author	Number of publications	University	H-Index
Nenagh Kemp	12	University of Tasmania	25
Abbie Grace	5	University of Tasmania	
Alejandro Gómez-Camacho	5	Universidad de Sevilla	11
Lieke Verheijen	4	Radboud University	10
Clare Wood	4	Nothingham Trent University	33
Frances H. Martin	4	Newcastle University	
Antonine Goumi	3	Université Paris Nanterre	6
Rauno Parrila	3	Macquarie University	53
Beverly Plester	3	Coventry University	

In terms of universities, we find scientific production on this subject in a total of 72 universities. As with the authors, we find a number of universities, specifically 8, which account for the production of 54.17% of the universities in total. The university with the greatest presence in this review is that of Tasmania (Australia) with a total of 13 articles, followed by Radboud University and the University of Seville with 5 articles each. Finally, we find Covertry University, The University of Newcastle (Australia), Universite de Toulouse, Université Paris Nanterre and Université Toulouse- Jean Jaurés with three articles with a member of this university.
As can be seen in Figure 3, Australia (n=12) and the United States (n=11) are the countries with the highest scientific output over the last thirteen years. In third place, we find the United Kingdom (n=8) followed by the European countries Spain (n=7), France (n=6) and the Netherlands (n=5).

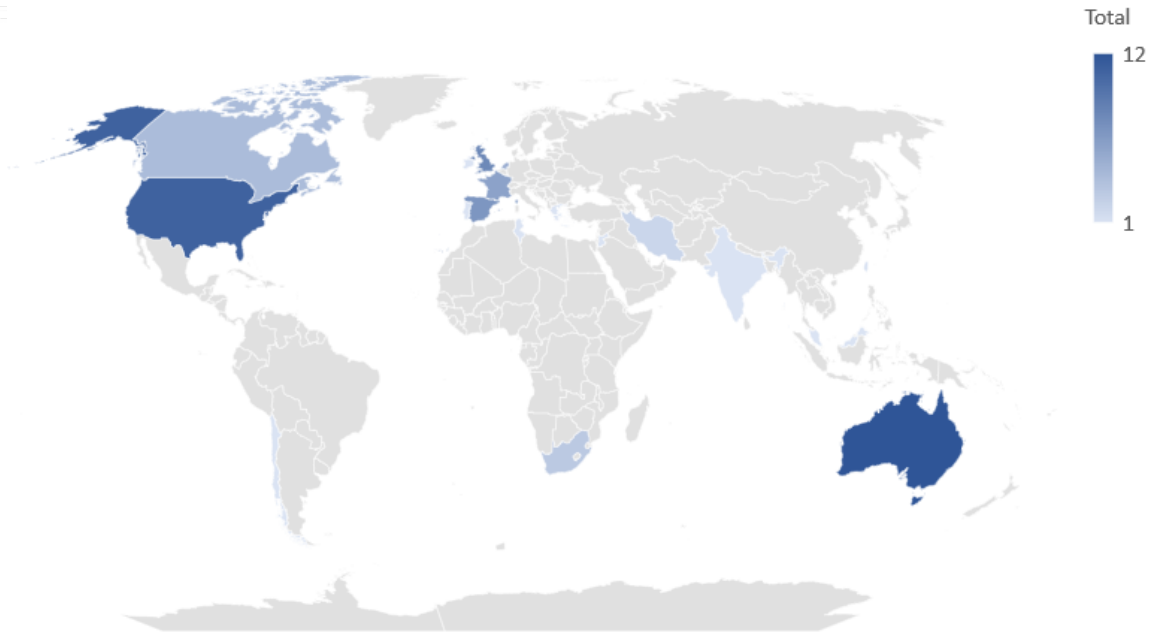

Figure 3. Countries with the highest number of publications on textism and textese

This information allows us to have an international overview of how research on digital communication and the use of textisms is distributed around the world.

Finally, the characteristics of the study samples and the participants were analysed. Of the 62 articles selected for this review, 55 of them had participants or samples. The mean number of participants in the studies is 294.02. The article with the fewest participants of those analysed is Bernicot *et al*. (2012) with 19 and the one with the highest number of participants is Parrella *et al.* (2021) with a total of 7734. There is a large difference in the number of participants between the different articles.

On the other hand, the ages of the participants are also very varied. Most of the articles, 35 of them, focus on young people between the ages of 18 and 25 years. In second place are the 12 articles that focus on 13–17-year-olds, followed by the 10 articles that study children aged 9-12. The least numerous studies are those focussing on adults over the age of 25, with only 4 of them.

3.2.2. Qualitative data analysis

The articles analysed in this systematic review can be divided into three different themes: Those that study the relationship between the use of textisms and literacy, those that approach the subject from a descriptive point of view, and finally those that focus on the attitudes and perceptions of different groups of people about the use of textisms.

The articles which study the relationship between the use of textisms and literacy are the most numerous, accounting for 40.32% of the total number of articles analysed. These, in turn, can be divided into two main blocks: those which study literacy in a global way, which are a total of 12 articles, and another 13 articles which focus on specific skills within literacy, among which we can highlight spelling, which is dealt with in 6 articles, informal and formal writing, which is dealt with in 3 articles, reading (1), creativity (1) and some combine two of the aforementioned skills, for example, reading and spelling or writing and spelling.

On the other hand, we find a total of 23 articles which address the question of textisms in a descriptive way, trying to characterise how textisms are used in different contexts by people of a specific age.

Thirdly, we find a total of 12 articles that focus on attitudes and perceptions towards textisms. Finally, it is worth highlighting the existence in this list of two articles that carry out a bibliographical review of what has been published on textisms in recent years.

Among the 25 selected articles that address the relationship between the use of textisms and literacy in general or specific aspects of literacy, there is a wide disparity in the conclusions reached by the different studies on the nature of this relationship. We find a number of studies that conclude that there is no negative relationship

 DOI: 10.12795/revistafuentes.2023.23011

between the use of textisms and literacy, i.e., they consider that after having carried out the study it cannot be said that the use of textisms harms the literacy of the participants, such as the study carried out by Wood *et al.* (2011). In this case, they even state that in the case of children, the use of textisms is associated with an improvement in literacy skills, especially in spelling. These results are congruent with those published by Plester *et al*. (2009), although they insist that these correlations need to be studied further and emphasise that a good way to do this would be through a longitudinal study. Bernicot *et al*. (2014) conducted such a study and concluded that the correlation between the level of traditional spelling and the density of textisms depended on the type of textism used, as well as other variables.

We also found studies that not only deny a possible negative relationship, but also affirm the existence of a positive relationship between the use of textisms and spelling ability. Wood *et al.* (2011) found that the use of abbreviations was related to better spelling skills. In the same vein, Bushnell *et al.* (2011) found that the proportion of textisms correlated positively with overall spelling ability.

Finally, several studies conclude that the relationship they have observed between textisms use and literacy is negative. Drouin (2011) found a negative relationship between the use of textisms in certain contexts and literacy, in particular with reading accuracy. Along the same lines, in the study by De Jonge and Kemp (2012), a negative relationship was observed between the use of textisms and reading, spelling, and morphological awareness.

To be able to describe the lines of research of the total number of articles more precisely, an analysis of the connections between the keywords in each of the articles was carried out. To do this, we used VOSviewer software version 1.6.7, a tool whose main purpose is to construct and visualise bibliometric networks. Figure 4 shows the co-occurrence matrix with the criterion of two or more repetitions. This criterion was met by a total of 31 items of 143.

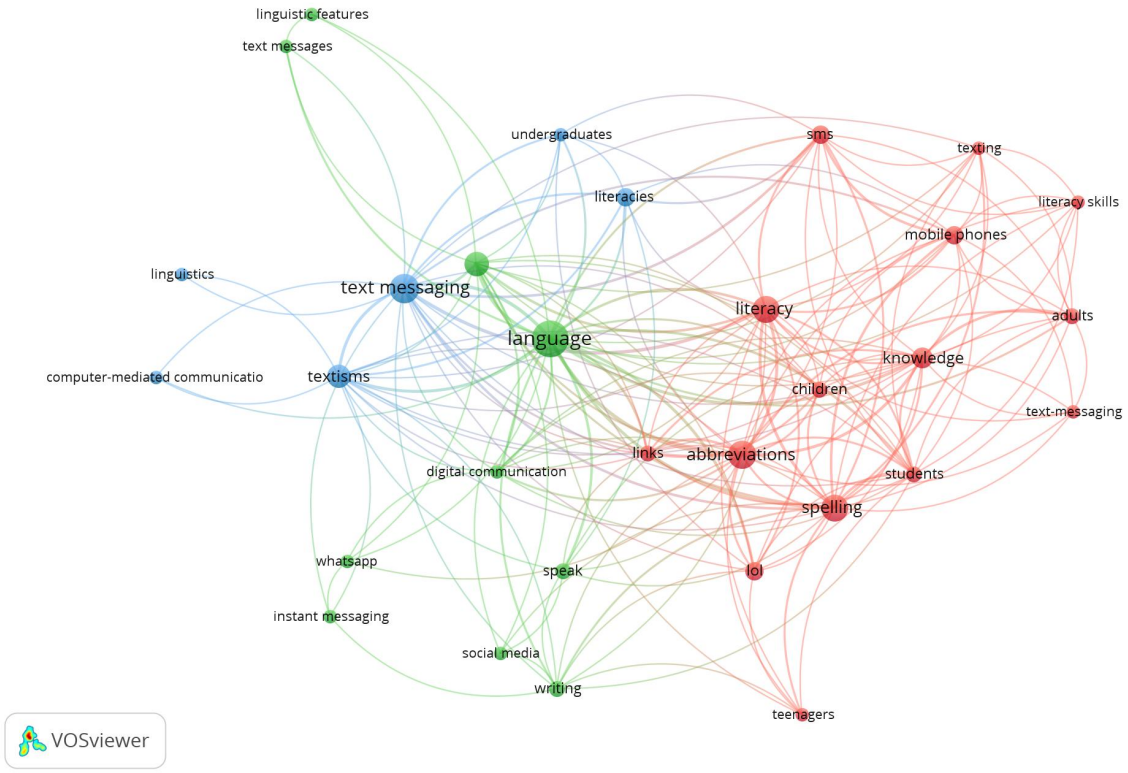

Figure 4. Graphical representation with VOSviewer of the thematic areas associated with textism and textese

To interpret the figure above, it should be taken into account that, as Colás-Bravo and Quintero Rodríguez (2023, 55) indicate, the frequency of occurrence determines the size of the terms and the label. Terms with high levels of correlation are located in the central area, while words with low levels of correlation are located at the extremes.

In the network obtained in the analysis, three thematic clusters can be distinguished:

- Cluster 1 (red colour) In this first cluster we find 15 items. It is the most numerous group and includes the following terms: abbreviations, literacy, spelling, knowledge, mobile phones, links, children, students, teenagers, adults, sms, lol, literacy skills, texting, and text-messaging.
- Cluster 2 (green colour) Secondly, in the green group there are 10 items, among which we can highlight language, digital communication, WhatsApp or instant messaging.
- Cluster 3 (blue colour). Finally, in the third cluster, the smallest of all, there are six items: text messaging, textims, computer-mediated communication, linguistics, undergraduates, and literacies.

The analysis of the clusters shows a strong relationship between textisms and language in general with literacy, especially in children and undergraduates, although adolescents and adults also appear to a lesser extent.
On the other hand, in order to analyse the evolution of research articles between 2009 and 2022, the same concurrence analysis has been carried out, with the difference that on this occasion the colours of the graph provided (Figure 5) are determined by the year or years in which these terms begin to appear.

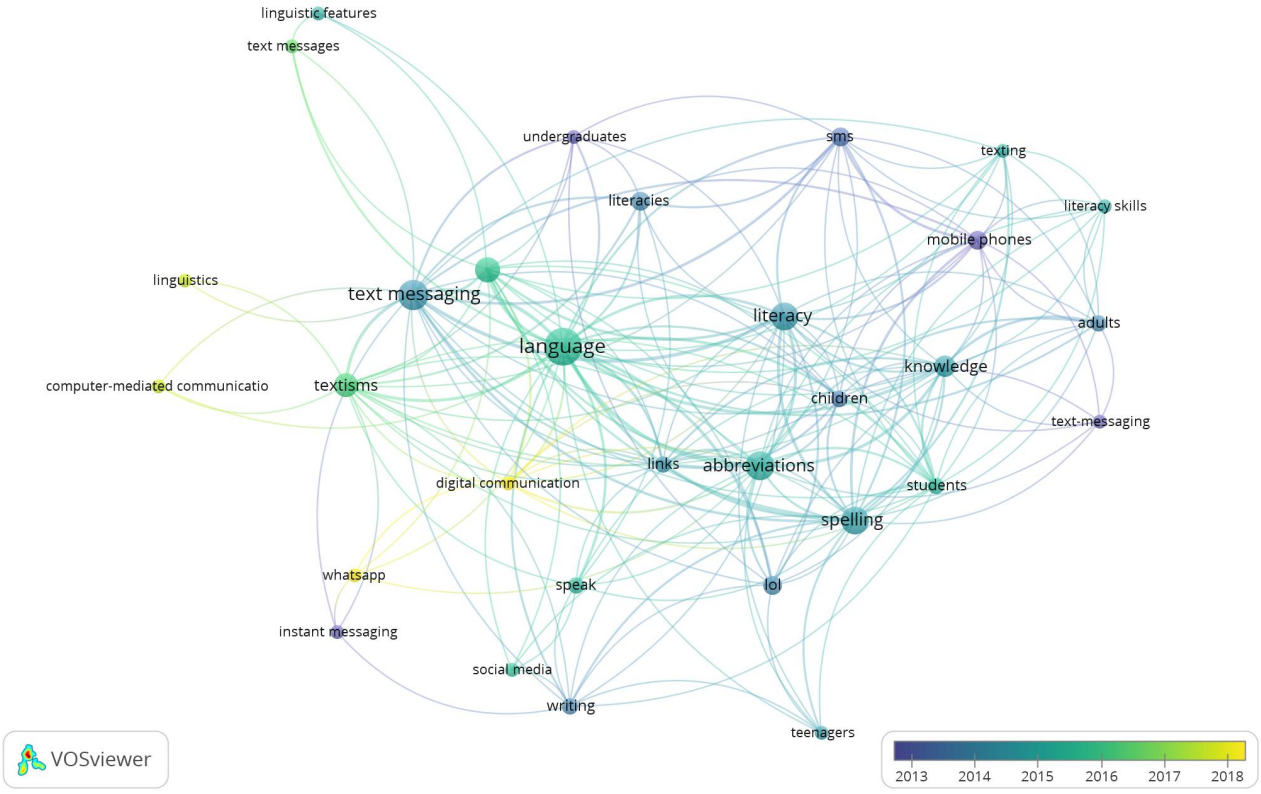

Figure 5. Graphical representation with VOSviewer of the evolution by year of the themes associated with textism and textese.

The keywords observed in the first articles analysed, approximately between 2009 and 2014, are mobile phones, SMS, and undergraduates. This indicates that since the terms 'textisms' and 'textese' began to appear in the literature, they have been associated with the use of mobile phones and specifically with SMS (Short Messaging Service). In these early years, studies focused on undergraduates.
In the following years, between 2014 and 2017, terms such as language, abbreviation spelling, or language began to appear.
In the most recent years, that is, from 2018 onwards, we find keywords such as WhatsApp, digital communication or computer-mediated communication.

 DOI: 10.12795/revistafuentes.2023.23011

It can be seen how the focus of studies on this topic has changed over the last few years. At the beginning, studies were mainly focused on the study of SMS, and the approaches are opening up in terms of their subject matter towards a greater presence of linguistic studies that try to characterise what linguistic communication is like. In addition, studies are increasingly focussing on the WhatsApp instant messaging application WhatsApp.

4. Discussion and conclusions

The last two decades have seen a series of substantial changes in the way we communicate, brought about by CMC and the widespread use of instant messaging applications that have been appearing over the last few years. The growing interest in these changes, reflected in modifications of digital written language with the use of shortenings, emoticons, or changes in the way words are written, is indisputable. This is why scientific production on digital communication and the use of textisms appeared shortly after the first manifestations of changes in language, in SMS. For this reason, it was considered appropriate to carry out a bibliometric analysis to find out what has been written on this subject, which topics have been addressed the most, which authors are most specialised, and which journals have been responsible for disseminating this type of study in recent years, as well as other relevant issues. In this way, in addition to knowing what has been done to date, it allows us to consider possible future lines of research that may be of interest to the subject.

The volume of scientific production on digital communication and textisms does not show a linear trend in the years that have been analysed (2009-2022). This is why it is currently very difficult to predict what the trend will be in the coming years in the number of articles to be published on the selected topic.

In the process of screening publications, all publications that were not written in Spanish or English were eliminated, but by applying this filter, we only lost a total of two articles that were written in another language. Of the 62 articles analysed, 58 are written in English, which is 93.55% of the total. This fact could be explained by other data that have been analysed in other research objectives of this review, such as the fact that four of the five journals with the highest number of publications are from English-speaking countries such as the United Kingdom or the United States. It is noteworthy that the four journals with the most publications are from the United Kingdom and all of them have a high quartile in Scopus, which indicates that there is a real interest in studies on this subject, which is capable of attracting high impact journals such as the *Journal of computer assisted learning*, *Writing Systems Research*, *Language Matters* or the *Journal of Research in Reading*. In these four journals, we find the Social Science area as one of the main areas, with two sub-areas standing out: education and linguistics and language.

In addition, the authors with the highest number of publications on the subject almost all come from universities where English is the main language, such as Nenagh Kemp and Abbie Grace from the University of Tasmania and Clare Wood from Nothingham Trent University. We highlight the case of Alejandro Gómez-Camacho, Antonine Goumi and Lieke Verheijen, the only authors of those with more publications who do not come from a university located in an English-speaking country, although almost all the publications of these authors that form part of the review are written in English.

Regarding the subject matter of each of the articles, a keyword analysis was performed using VOSviewer software. It is worth highlighting the relevance of the word ‘language’, which is shown to be the most relevant of the selected articles, as all of them try to find out more about the language of digital media.

It is worth noting the presence of numerous articles that address the relationship between the use of digital language characterised by the use of textisms and literacy. These studies have probably been designed with the aim of responding to the widespread fear that has been conveyed in the media (Drouin, 2014, 251) and that parents and teachers have been sharing for several years about whether the language of their children and students could deteriorate (Verheijen, 2018, 112).

However, in the review, no clear and unique answer can be found to the question of whether the use of textisms could affect literacy.

These diverse results could be due to, as Verheijen (2013, 596) states, the great differences in the design of the studies' methodologies as well as the samples selected. In this review, we find studies ranging from studies with 19 participants (Bernicot *et al*., 2012) to studies with a sample size of 718 participants (Rosen *et al*., 2010).

Regarding the evolution of the subject matter of the articles in recent years, it is worth noting that despite the initial predominance of studies that focused on studying SMS (Plester *et al*., 2009) (Kemp, 2010; Coe *et al*. 2011; Marzuki, 2013), a new trend can be observed: exploring digital communication via WhatsApp (Van Dijk

et al. 2016) (Gómez-Camacho and Gómez del Castillo, 2017; Tragant *et al*. 2020), thus opening up a new space in the field of education that could have a long way to go.

Finally, this systematic review allows us to determine possible lines of research that could be addressed in the future, such as the continuation of studies that focus on WhatsApp, describing the language used in this application, as well as the correlation that may exist between the use of textisms in this application and literacy, as there are still few articles that we found with these characteristics, which prevents us from generalising or comparing the conclusions between studies. Thus, if the observed tendency to affirm that textisms not only do not harm literacy but that students who use them have more skills in general or in specific areas such as spelling, it would be important for parents and teachers to be aware of this so that, as Bushnell *et al.* (2011, 35) argue, they can help this new form of written communication to foster children's interest and skills in language and literacy. Furthermore, the analysis of language and textisms used on emerging platforms such as Twitch could be explored.

By way of speculation, one could say that it is a good idea to introduce the digital norm as a resource for literacy in the classroom. Following the model of Bernicot's research (2014) for the French language, the difference of textisms that associate phonemes and graphemes in a different relationship to other textisms suggests that new ways could be explored for the didactics of spelling that relate textisms to the academic norm. In the case of the Spanish language, the faults related to the digraph "qu" may establish a link with the textisms of k. In the case of auxiliary signs, the omission of tildes is a recurrent fault in the Spanish language that could be worked on the basis of textisms of omission of tildes, which are also very frequent. However, this is not a conclusion supported by the present study, but a suggestion.

Support

This study is part of the doctoral thesis entitled "Textismos y norma digital del alumnado adolescente" by Olga Fernández-Juliá, under the supervision of Alejandro Gómez-Camacho. It is also part of the project "La escritura digital del alumnado adolescente en Andalucía. La mensajería instantánea y sus implicaciones educativas" (US-1380916) of the University of Seville, co-funded by the European Union's ERDF Operational Programme 2014-2020 and by the Regional Ministry of Economic Operational Programme ERDF 2014-2020 of the European Union and by the Consejería de Transformación Económica, Industria, Conocimiento y Universidades de la Junta de Andalucía (Spain).

References

Al-Kadi, A. M. T., & Ahmed, R. A. (2018). Evolution of English in the internet age. *Indonesian Journal of Applied Linguistics*, 7(3), 727-736. https://doi.org/10.17509/ijal.v7i3.9823

Bernicot, J., Goumi, A., Bert-Erboul, A., & Volckaert-Legrier, O. (2014). How do skilled and less-skilled spellers write text messages? A longitudinal study. *Journal of computer assisted learning*, *30*(6), 559-576. https://doi.org/10.1111/jcal.12064

Bernicot, J., Volckaert-Legrier, O., Goumi, A., & Bert-Erboul, A. (2012). SMS experience and textisms in young adolescents: Presentation of a longitudinally collected corpus. *Lingvisticae Investigationes*, *35*(2), 181-198. https://doi.org/10.1075/li.35.2.04ber

Bock, Z. (2013). Cyber socialising: Emerging genres and registers of intimacy among young South African students. *Language Matters*, 44(2), 68-91. https://doi.org/10.1080/10228195.2013.784924

Burrell, A., & Beard, R. (2022). Playful punctuation in primary children's narrative writing. *Research Papers in Education*, 1-28. https://doi.org/10.1080/02671522.2022.2125053

Bushnell, C., Kemp, N., & Martin, F. H. (2011). Text-messaging practices and links to general spelling skill: A study of Australian children. *Australian Journal of Educational & Developmental Psychology*, 11, 27-38. https://files.eric.ed.gov/fulltext/EJ941319.pdf

Cenoz, J., & Bereziartua, G. (2016). Is instant messaging the same in every language? A Basque perspective. *Reading and Writing*, 29(6), 1225-1243. https://doi.org/10.1007/s11145-016-9634-z

Chalak, A. (2017). Linguistic features of English textese and digitalk of Iranian EFL students. *Journal of Research in Applied Linguistics*, *8*, 67-74. https://doi.org/10.22055/rals.2017.12870

Coe, J. E., & Oakhill, J. V. (2011). 'txtN is ez fu no h2 rd': The relation between reading ability and text-messaging behaviour. *Journal of Computer Assisted Learning*, *27*(1), 4-17. https://doi.org/10.1111/j.1365-2729.2010.00404.

Colás-Bravo, P. y Quintero-Rodríguez, I. (2023). YouTube y aprendizaje: Una revisión bibliográfica sistemática. *REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 21(1), 47-63. https://doi.org/10.15366/reice2023.21.1.003

De Jonge, S., & Kemp, N. (2012). Text-message abbreviations and language skills in high school and university students. *Journal of Research in Reading*, *35*(1), 49-68. https://doi.org/10.1111/j.1467-9817.2010.01466.x

Drouin (2014) Texting, textese and literacy abilities: a naturalistic study. *Journal of Research in Reading,* 37(3), 250-267. https://doi.org/10.1111/j.1467-9817.2012.01532.x

Gómez-Camacho, A., & Gómez del Castillo, M. T. (2017). La norma escrita en las conversaciones de WhatsApp de estudiantes universitarios de posgrado. *Revista mexicana de investigación educativa*, *22*(75), 1077-1094. https://idus.us.es/handle/11441/67296

Gómez-Camacho, A., Hunt-Gomez, C. I., & Valverde-Macías, A. (2018). Textisms, texting, and spelling in Spanish. *Lingua*, 201, 92-101. https://doi.org/10.1016/j.lingua.2017.09.004

González Moreno, A., & Molero Jurado, M. D. M. (2022). Diferencias de sexo en habilidades sociales y creatividad en adolescentes: una revisión sistemática. *Revista Fuentes 24*(1) 116-126. https://doi.org/10.12795/revistafuentes.2022.17471

Goumi, A., & Besançon, M. (2019). 2 B kreativ'or not to be creative: Textisms and texters' creativity. *European Review of Applied Psychology*, *69*(4), 1-36 https://doi.org/10.1016/j.erap.2019.100470

Houghton, K. J., Upadhyay, S. S. N., & Klin, C. M. (2018). Punctuation in text messages may convey abruptness. Period. *Computers in Human Behavior*, 80, 112-121. https://doi.org/10.1016/j.chb.2017.10.044

Hunt-Gómez, C. I., Núñez-Román, F., & Gómez-Camacho, A. (2020). Textismos y ortografía. Percepción de los profesores en formación de la Generación Z. *Formación universitaria*, 13(2), 143-152. https://doi.org/10.4067/S0718-50062020000200143

Jacquet, B., Jaraud, C., Jamet, F., Guéraud, S., & Baratgin, J. (2021). Contextual information helps understand messages written with textisms. *Applied Sciences*, *11*(11), 1-10. https://doi.org/10.3390/app11114853

Kemp, N. (2010). Texting versus txtng: reading and writing text messages, and links with other linguistic skills. *Writing Systems Research*, *2*(1), 53-71. https://doi.org/10.1093/wsr/wsq002

Kemp, N., Graham, J., Grieve, R., & Beyersmann, E. (2021). The influence of textese on adolescents' perceptions of text message writers. *Telematics and Informatics*, 65, 1-11 https://doi.org/10.1016/j.tele.2021.101720

Lanchantin, T., Simoës-Perlant, A., & Largy, P. (2015). The amount of French text messaging related to spelling level: why some letters are produced and others are not?. *PsychNology Journal*, *13*(1) 45-52. https://www.researchgate.net/publication/283270052_The_amount_of_French_text_messaging_related_to_spelling

López Quero, S. (2013). La conversación escrita en internet: caracterización pragmalingüística. *Sintagma, 25*, 77-92.

López-Meneses, E., Vázquez-Cano, E. y Román, P. (2015). Análisis e implicaciones del impacto del movimiento MOOC en la comunidad científica: JCR y Scopus (2010-13). Comunicar, 22(44), 73-80. https://doi.org/10.3916/c44-201508

Marzuki, E. (2013). Linguistic features in SMS apologies by Malay native speakers. *GEMA Online Journal of Language Studies*, *13*(3), 179-192. http://journalarticle.ukm.my/6601/1/4228-9737-1-SM.pdf

Nixon, B., & Guajardo, N. R. (2022). The Digital Chameleon: Factors Affecting Perceptions of Convergence in Computer-Mediated Communication. *Journal of Language and Social Psychology*, https://doi.org/10.1177/0261927X221146143

Núñez-Román, F., Gómez-Camacho, A., Errázuriz-Cruz, M. C., & Núñez-Cortés, J. A. (2022). Pre-service Teachers' perceptions on instant messaging and orthographic competence. *Texto Livre*, *14*(3), 1-15. https://doi.org/10.35699/1983-3652.2021.34141

Onanuga, P. (2017). Language Use in Nigerian Spam SMSs: A Linguistic Stylistic Analysis. *Language Matters*, 48(2), 91-116. https://doi.org/10.1080/10228195.2017.1337805

Ong, K. K. W. (2017). Textese and Singlish in multiparty chats. *World Englishes*, 36(4), 611-630. https://doi.org/10.1111/weng.12245

Page, M. J. *et al*. (2022). Declaración PRISMA 2020: una guía actualizada para la publicación de revisiones sistemáticas. *Revista Española de Cardiología*, 74(9), 790-799. https://doi.org/10.26633/RPSP.2022.112

Parrella, J., Leggette, H., & Redwine, T. (2021). Measuring the correlation between digital media usage and students' perceived writing ability: Are they related?. *Research in Learning Technology*, 29. https://doi.org/10.25304/rlt.v29.2506

Plester, B., Wood, C., & Joshi, P. (2009). Exploring the relationship between children's knowledge of text message abbreviations and school literacy outcomes. *British journal of Developmental psychology*, *27*(1), 145-161. https://doi.org/10.1348/026151008X320507

Rosen, L. D., Chang, J., Erwin, L., Carrier, L. M., & Cheever, N. A. (2010). The relationship between "textisms" and formal and informal writing among young adults. *Communication Research*, *37*(3), 420-440. https://doi.org/10.1177/0093650210362465

Statista (2021) *Número de suscripciones de smartphones a nivel mundial desde 2016 hasta 2027*. http://bit.ly/3QPipyC

Statista (2022) *Panorama mundial de las redes sociales. https://*bit.ly/3CW9Xba

Totanes, B. C., & Lintao, R. B. (2019). Textese Categories and Textese Application in L2 Class Discussion. *Journal on English Language Teaching*, 9(1), 14-31. https://eric.ed.gov/?id=EJ1214405

Tragant, E., Pinyana, À., Mackay, J., & Andria, M. (2020). Extending language learning beyond the EFL classroom through WhatsApp. *Computer Assisted Language Learning*, 1-30. https://doi.org/10.1080/09588221.2020.1854310

Van Dijk, C. N., Van Witteloostuijn, M., Vasić, N., Avrutin, S., & Blom, E. (2016). The influence of texting language on grammar and executive functions in primary school children. *PloS one*, *11*(3), https://doi.org/10.1371/journal.pone.0152409

Verheijen, L. (2013) The Effects of Text Messaging and Instant Messaging on Literacy. *English studies*, 94(5), 582-602. https://doi.org/10.1080/0013838X.2013.795737

Verheijen, L. (2018). Orthographic principles in computer-mediated communication: The SUPER-functions of textisms and their interaction with age and medium. *Written Language & Literacy*, *21*(1), 111-145. https://doi.org/10.1075/wll.00012.ver

Wood, C., Kemp, N., & Waldron, S. (2014). Exploring the longitudinal relationships between the use of grammar in text messaging and performance on grammatical tasks. *British Journal of Developmental Psychology*, 32(4), 415-429. https://doi.org/10.1111/bjdp.12049

Wood, C., Meachem, S., Bowyer, S., Jackson, E., Tarczynski-Bowles, M. L., & Plester, B. (2011). A longitudinal study of children's text messaging and literacy development. *British Journal of Psychology*, *102*(3), 431-442. https://doi.org/10.1111/j.2044-8295.2010.02002.x

Wray, D. (2015). An exploration of the views of teachers concerning the effects of texting on children's literacy development. *Journal of Information Technology Education. Research*, 14, 271. https://doi.org/10.28945/2272

Yus, F. (2021) *Smartphone communication: Interactions in the app ecosystem*. Routledge.