Towards an ontology of detachment factors in digital reading processes in Higher Education

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Abstract

The consumption of information in digital environments has disruptively transformed the reading models and practices historically consolidated under the influence of the book as an archetypal device for printed reading. The digital ecosystem has spread a new style of reading, characterised mainly by being faster and more selective, in which issues related to pragmatism and productivity are paradigmatically placed before the advantages of analogic devices in the cognitive and sensory spheres. This study identifies and analyses the perceived factors of detachment from digital reading in the specific context of reading practice in the educational community at the University of Salamanca. For this purpose, a representative sample (n=25) of students and teachers selected by simple random sampling is questioned through a semi-structured interview, and the results are studied with the assistance of *Atlas.ti* tool. The results allow us to identify and analyse a series of factors and their interrelationships, which appeal to aspects such as cognition, emotional and/or aesthetic perception, accessibility, or pragmatic potential, among others, that make up the ontological reality that explains the detachment and resistance of print in the face of the colonising process of digital technologies.

Keywords: Digital reading; reading habits; digital humanities; information technology; Higher Education.

Hacia una ontología de factores de desapego en procesos de lectura digital en Educación Superior

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Resumen

El consumo de información en entornos digitales ha transformado de forma disruptiva los modelos y prácticas lectoras históricamente consolidadas bajo la influencia del libro como dispositivo para la lectura impresa. El ecosistema digital ha difundido un nuevo estilo de lectura, caracterizado principalmente por ser más rápido y selectivo, en el que se anteponen de manera paradigmática cuestiones relacionadas con el pragmatismo y la productividad, frente a las ventajas de lo analógico en el ámbito cognitivo y sensorial. El presente estudio identifica y analiza los factores percibidos de desapego hacia la lectura digital en el contexto específico de la práctica lectora en la comunidad educativa en la Universidad de Salamanca. Para ello se pregunta a una muestra representativa (n=25) de alumnos y profesores seleccionados mediante muestreo aleatorio simple, a través de una entrevista semiestructurada, y se estudian los resultados con la asistencia de la herramienta Atlas.ti. Los resultados permiten identificar y analizar una serie de factores, y sus interrelaciones, que apelan a aspectos como la cognición, la percepción emocional y/o estética, la accesibilidad o la potencialidad pragmática, entre otros, que conforman la realidad ontológica que explica el desapego, y la resistencia de lo impreso, frente al proceso colonizador de las tecnologías digitales.

Palabras clave: Lectura digital; hábitos de lectura; humanidades digitales; tecnologías de la información; Educación Superior.

INTRODUCTION: DIGITAL AS A DISRUPTIVE ELEMENT IN THE READING TRADITION

Since the appearance of writing, all changes in the processes of written communication have been met with reticence, censure or outright rejection. The invention of writing itself produced one of the most powerful discourses in the classical tradition, the one developed by Plato in *Phaedrus*, where the virtues of the new invention are questioned because of the damage it would cause to memory, since any written record of any message would undermine the biological processing capacity of the message. Lledó (2015) makes this clear in the beautiful study he devoted to this dialogue, whose arguments have been reproduced in numerous subsequent texts to refute other innovations of the same nature. In this case, the contrast was between two systems that were to coexist for thousands of years, the oral system, practiced until then by the entire social community, and the written system, which was nascent at the time, but which from that moment on would revolutionise the entire record of memory and become the standard of communication. The reservations expressed against writing were extended to reading, especially when it began to become widespread, leaving the walls of the monasteries and spreading messages contrary to power, religion or social conventions.

Nowadays, from a cognitive point of view, as was the case with writing, and later with printing, digital technology has raised all kinds of questions and rejections by a significant part of reading theorists and researchers who have emphasised the values of digital technology in relation to its possibilities for intellectual enrichment. Problems of concentration, memorization and depth are cited to weigh up the better results of the printed environment in these fields. Although in recent years authors such as Van-der-Weel and Mangen, (2022), Wolf (2018), or Baron (2022), have relativised these categorical positions and established the conditions in which digital reading can be viable from different angles, it is still possible to appreciate severe positions of rejection towards it. A certain technological servitude is also alleged, based on the need to use intermediary devices, which, far from being exclusively dedicated to reading, establish interruption and distraction as disruptive elements of reading.

In this context, digital reading falls within a problematic framework, in which, moreover, a general struggle for attention is taking place in the field of cultural industries (Alombert, 2023; Cordón-García & Muñoz-Rico, 2022). Leisure time increasingly appears as a terrain of struggle to capture the interest of citizens through products of various kinds with which books must compete, in that sort of economy of attention theorised by Alain Giffard (2013). The problem is that the rest of the elements that enter the fray (films, music, audio, games, etc.) are less cognitively demanding than reading, and therefore have the initial advantage of a better predisposition on the part of people to consume them (Varela-Garrote et. al., 2019). The boom of the audiobook in the publishing sector since 2017, with growth figures that double and triple those of e-books, is only evidence of this assertion, which would ratify the theories of the Gutenberg Parenthesis, but also the assumptions found in works on second orality and scripturality (Vallée, 2016; Sauerberg, 2009; Guillory, 2021).

This is the general framework in which digital reading practices develop. However, there is a greater or lesser level of loyalty among readers depending on their circumstances and contexts, but the critical point, which must be analysed to know precisely the nature of the problem, lies in those sectors that reject digital, for various reasons, which show different forms of reticence towards the new media, ranging from the purely aesthetic, to the cognitive, to the emotional or the sensorial.

METHODOLOGY

This research aims to examine how the academic community, in the specific case of the University of Salamanca, perceives the digital reading experience, from the perspective of obtaining the most personal vision of everyone by means of semi-structured interviews. From this approach, the aim is to move towards an ontological model of the factors of detachment from digital reading in terms of their perception. To this end, we have identified groups and categories of individuals representative of each

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez,
José Antonio Cordón-García

area of academic activity in relation to the areas of study or disciplines of specialisation, or the level and intensity of dedication to reading. In this way, the aim is to verify the presence of effects that predetermine the adoption of certain positions of detachment towards digital reading and their degree of correlation with the conditioning factors collected in the scientific literature. At the same time, the aim is to discover the existence of other factors that have not been identified in previous research.

Population and sample selection

The study population corresponds to students (undergraduate, master's and doctoral) and teaching and research staff (PDI) of the University of Salamanca. The sample (n=25) is constituted by simple random sampling and is distributed among the different areas as shown in table 1.

Table 1

Sample distribution

	Arts and Humanities	Sciences	Health Sciences	Social Sciences and Law	Engineering and Architecture
Undergraduate Student	4%	4%	4%	8%	4%
Master's Student	4%			4%	
PhD Student	8%		4%	4%	4%
Associate Professor	4%			4%	
Assistant Doctor Professor					4%
Contracted Doctor Professor	8%			4%	4%
Ordinary Professor			4%	4%	
Professor	4%	4%	4%		

The instrument used for data collection, the semi-structured interview, includes a series of open questions, formulated from the point of view of neutrality to avoid preconceived ideas or biases in the positioning of the interviewee. These questions are aimed at obtaining relevant information in accordance with the objective of the study; that is, to ascertain the existence of descriptive categories relating to the factors of detachment identified by the readers.

ANALYSIS

This research is developed through qualitative analysis using state-of-the-art tools and techniques for textual and discourse analysis to identify and codify the aspects related to the research context.

The qualitative analysis is developed through the Miles and Huberman protocol, proposed in Bisquerra-Alzina & Sabariego-Puig (2004), which differs in four stages (figure 1):

- Data collection: To develop the data analysis, computer techniques have been used to process the information, and therefore the interview transcripts have been uploaded to Atlas.ti software, which allows the data collected to be divided into units of meaning;

- Information reduction: in this phase, raw data are selected, focused and abstracted into units of meaning called content categories, according to specific thematic criteria. This stage includes the categorisation and coding of discourse content;

- Organised display of data: the results of the analysis are displayed graphically by means of graphs and/or matrices (tables) to visualise and memorise the links between the data for later interpretation; and

- Drawing conclusions: Throughout the process of reduction and exposition, regularities, patterns, explanations, generalizations, typologies and models have been identified that synthesise the information analysed.

Figure 1

Data analysis protocol (Miles & Huberman, 1984)
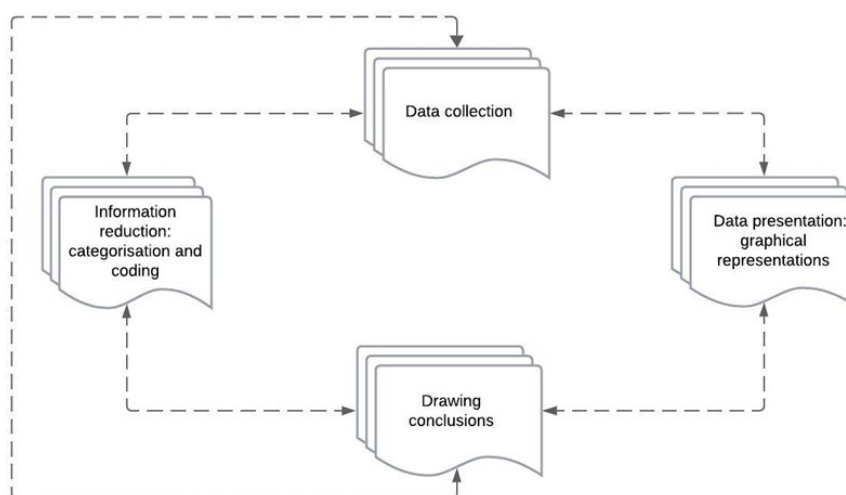
RESULTS AND DISCUSSION

This section examines the profiles of the interviewees according to the general approach of the interviews, as well as their perception of digital reading and their chosen reading medium in terms of their reading practice.

Self-perceived level of digital competences

The evaluation factors considered to make up the profile of the interviewee firstly assess their level of knowledge about digital reading. Secondly, the attitude with which the participant answers the questions and gives his/her opinion on it, showing greater or lesser familiarity and fluency in approaching the subject of study, is considered. Finally, the use of technical vocabulary is considered as an indicator of competence and mastery of the subject. Based on these considerations, five levels of assessment are developed, from Level 0 or "Unqualified" to Level 4 or "Expert". Each level corresponds to a specific reader and/or user profile in relation to digital reading practice (table 2).

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

Table 2

Levels of evaluation interviewed

Level 0: Unqualified	Level 1: Beginner	Level 2: Intermediate	Level 3: Advanced	Level 4: Expert
1. No knowledge of the subject	1. Understands the notions mentioned	1. Has basic knowledge of the subject	1. Knows and applies the knowledge at home	1. Shows full familiarity with and command of the subject matter
2. Does not answer questions	2. Need examples to answer the questions	2. It is limited to answering the questions	2. Answer the questions fluently	2. Answer questions and elaborate on issues
3. Does not express an opinion and argue	3. Finds it difficult to express an opinion and argue	3. Follow the thread of the conversation	3. Provide examples and comment on them	3. Think critically and refer to studies
4. Uses a limited vocabulary: yes, no, gestures, etc.	4. Does not use appropriate technical vocabulary	4. Use basic technical vocabulary	4. Use advanced technical vocabulary	4. Use expert technical vocabulary

Table 3 shows the levels of evaluation of the entire sample interviewed, made up of Bachelor's, Master's and PhD students and the teaching and research staff. In the first place, a higher representation of readers at the Intermediate and Advanced levels is detected, 42% and 27% respectively. On the other hand, 19% of those interviewed assume a Beginner profile, while the Expert level corresponds to only 12% of the total sample.

Table 3

Percentage of sampling evaluation level

Level 0: Unqualified	Level 1: Beginner	Level 2: Intermediate	Level 3: Advanced	Level 4: Expert
0%	19%	27%	42%	12%

Table 4 shows in greater detail to which academic branches each assessment level corresponds. Thus, the teaching and research staff are mainly at the Advanced level, and 12% as Expert, while the majority of Bachelor, Master and PhD students show a Beginner and Intermediate digital reader profile.

Table 4

Profiles of the interviewees by academic branch

PDI	PhD	Master's degree	Grade
Level 4. Expert 23%. Level 3. Advanced 77%	Level 2. 100% Intermediate	Level 2. Intermediate 50%. Level 1. Beginner 50%.	Level 3. Advanced 17% Level 2. Intermediate 16% Level 1. Beginner 67%.

Perceptions and determinants of reading in the digital environment

Table 5 compiles the responses regarding personal perceptions of digital reading. Approximately 56% of the sample have a positive perception, while only 4% have a negative perception. Finally, a significant part of the participants (40%) has an undefined position.

Table 5

Perception of digital reading

Positive perception	Negative perception	Perception not defined
56%	4%	40%

Positively perceived factors in relation to digital reading

56% of those interviewed said they had a positive predisposition towards digital reading due to the characteristics of this environment and the functionalities that electronic devices provide to the reader: accessibility to information, portability of the media, information search, selective reading, etc.

Participants also agree that digital reading has democratised knowledge thanks to the penetrability and accessibility of web resources and is considered an alternative way of approaching information as opposed to the traditional process of analogue consultation.

However, this positive inclination encounters a first trend variable when reference is made to reading as a leisure activity, a context in which the printed format is preferred for reasons related to the aesthetic aspects of the paper book, and the artistic-sensory or emotional elements that foster a more immersive reading experience than in the digital sphere. Analogue reading is also appreciated by respondents for generational and customary reasons.

Negatively perceived factors related to digital reading

4% expressed a negative perception of digital reading, pointing out disadvantages compared to the printed format in relation to the tangibility and physiognomy of the book as an object and its mechanical implications: the possibility of being able to manipulate and intervene manually in the text, as well as the emotional repercussions that reading on paper provides for the reader. In addition, it is pointed out that reading on screen transmits discomfort on a physiological level, especially causing eye strain, considered a crucial factor for the choice of format in intensive reading practices.

On the other hand, 40% of the sample argue unclear questions about their perception of digital reading, showing a general inclination towards paper, without excluding *a priori* the use of digital. The vacillation in their perception depends on some contextual, occasional and location variables. Thus, one format or another is chosen depending on the reading objectives, which may require certain approaches and approaches. Generally speaking, paper is favoured for reasons related to the aesthetic component of the printed book, i.e. its sensorially, personal attachments and artistic elements. On the other hand, the respondents' inclination towards the digital format is nuanced by work requirements. The place where the reading takes place is also considered in relation to the convenience of the digital device versus paper or vice versa. Despite the general inclination towards print reading, the interviewees recognise the functionalities of digital textuality, which make reading an extensive practice, in that the consultation of information transcends the original text by means of hyperlinks and search options. However, the accessibility and affordability of digital can be a source of over-information, so it is perceived as necessary to have the ability to control and select information in the online consultation process to avoid being distracted by over-information.

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

Perception of reading support as a function of reading practice

Throughout the interview phase, participants were asked whether there are specific contexts, objectives or situations in which they believe it is more useful for reading to be done through a printed or digital medium. Table 6 highlights two macro-areas of study concerning the use of analogue and digital reading in the contexts of academic and leisure reading. Forty percent of those interviewed opt for print for their academic reading, in contrast to 60% who opt for digital reading. On the other hand, 60% of academic readers prefer to read their leisure reading in print format, compared to 40% who prefer to read digitally.

Table 6

Reading practice vs. reading support

	Printed format	Digital Format
Academic reading	40%	60%
Leisure reading	60%	40%

Area: Academic reading

Forty per cent of the participants stated that they do their academic reading in print. Among the motivations argued by these readers, the following are recurrently mentioned: the cognitive skills of concentration (8%), comprehension (8%) and retention (17%) of the content of the text, as well as the level of intervention and manipulation of the text (58%), or the quality of the visualisation of the printed page compared to the digital page (8%). There is a higher occurrence of the text intervention and manipulation factor, with readers claiming to prefer the printed medium in work-study practice to be able to underline and annotate manually. In addition, respondents claim that manual manipulation of the text increases their reading ability from a cognitive point of view. Also, viewing text in print provides a better quality of images than on screen and increases the reader's level of concentration while reading.

The rest of the sample (60%) prefer to do their academic reading in digital format. This inclination is favoured by factors related to the nature of the digital text: navigation for information consultation (44%); hyper textuality (11%); multilinearity (11%) or *multitasking* (33%). It can therefore be stated that the above factors are mutually interdependent and closely linked. Although they have been mentioned independently, the navigation factor includes them integrally, so that it appears to be the most recurrent in the interviewees' quotations. Finally, it is important to highlight that the preference declared by the interviewees regarding the use of the electronic medium in the reading practice aimed at studying the text is conditioned by the academic context to which they belong. In other words, the digital environment continues to expand in both educational and work environments, with the aim of promoting academic activities for consultation and the execution of shared tasks.

Area: Recreational or leisure reading

The 60% of respondents prefer to read their recreational or leisure reading in print. Among the motivations given, some readers opt for reading on paper for physiological reasons such as eye strain (25%). The emotional factor also stands out (25%) as a significant element in the connection between the reader and the printed book, which is neither replaceable nor reproducible in the digital environment. Furthermore, some readers associate print reading, in terms of the length of the text, with the time they are going to devote to it (25%), controlling the duration of their reading with greater precision, precisely because of the tangibility offered by the printed book as opposed to the book in digital format, both

because of its virtuality and the immateriality of its morphology. Other participants opt for reading on paper to disconnect from the digital environment (25%) that invades their working and daily lives. Finally, they opt for reading in print depending on the place where this activity is to be carried out, with the comfort of the home being the ideal place to enjoy a printed book on most occasions.

On the other hand, 40% of the sample favoured digital for leisure reading, and the automation of the digital support (20%), i.e. the possibility of adjusting the brightness of the screen according to environmental conditions and, above all, the automatic switch-off function of the electronic reading device, which is highly appreciated by users. The portability of digital devices (60%) is more frequently mentioned as a factor of appreciation, allowing readers to move around without worrying about the number of books they want to take with them.

Contextual practices and contexts

A significant aspect observed during the interviews is the perception conveyed by the participants regarding the use and selection of analogue and digital reading according to the different reading occasions and circumstances, as well as the characteristics associated with it.

Around this, analogue reading is considered a linear activity, suitable for processing and deepening the information of powerful texts that require a certain level of concentration and time from the reader. In this case, it can be deduced that analogue reading is related to the increase of the reader's cognitive capacities, i.e. reading on paper leads to improvements in the levels of concentration, comprehension and retention of the text, and, therefore, its use is linked to the analysis of certain texts that require more specific readings.

On the other hand, digital reading is differentiated and characterised by its transversality, as the reading process in the digital environment is largely "diagonal" with the intention of searching for key information, allowing for a quick and more superficial reading.

Digital reading devices

In this respect, the participants were asked what their favourite electronic reading device was. *Table 7* shows the results, from which most of the sample opted for the computer as their digital reading device, followed by mobile phones, e-Readers and iPads, and lastly, tablets.

41% of the sample prefers the computer, especially because of the size of the screen, which provides a better view of the text, reducing the user's visual effort. The same device is also valued due to the possibility of *multitasking*. On the other hand, 19% of those interviewed opt for the mobile phone as a reading device because it is practical and always at hand. The eReader category, such as Kindle or Kobo, is appreciated by 19% of the sample. The use of these devices as reading tools is justified by their portability and the absence of backlighting on the screens, reducing visual fatigue. Finally, the iPad and the tablet are the reading devices of choice for 15% and 6% respectively, particularly because of their similarity to the printed medium and because they are more manageable than a computer and more functional than an e-Reader.

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez,
José Antonio Cordón-García

Table 7

Digital reading devices

Computer	Mobile	e-Reader (Kindle; Kobo)	iPad	Tablet
41%	19%	19%	15%	6%

Ontological structure and categorisation of factors

In accordance with the title of this study, the aim is to propose an ontology of the factors of detachment from digital reading in the academic context. Therefore, fundamental categories have been defined relating to phenomena observed in the posture adopted by readers with respect to digital reading. Based on the study of their characteristics, the factors observed and mentioned by the interviewees are included, as well as the basic relationships established between them. With these issues in mind, figure 2 shows the categories and related codes emerging from the qualitative analysis, indicating - where it has occurred - the level of relationship established between the factors highlighted, choosing from the options provided by the textual analysis software Atlas.ti: "is a", "is property of", "noname", "is linked to", "is part of", "contradicts" and "is cause of".

Figure 2

Categorisation of factors
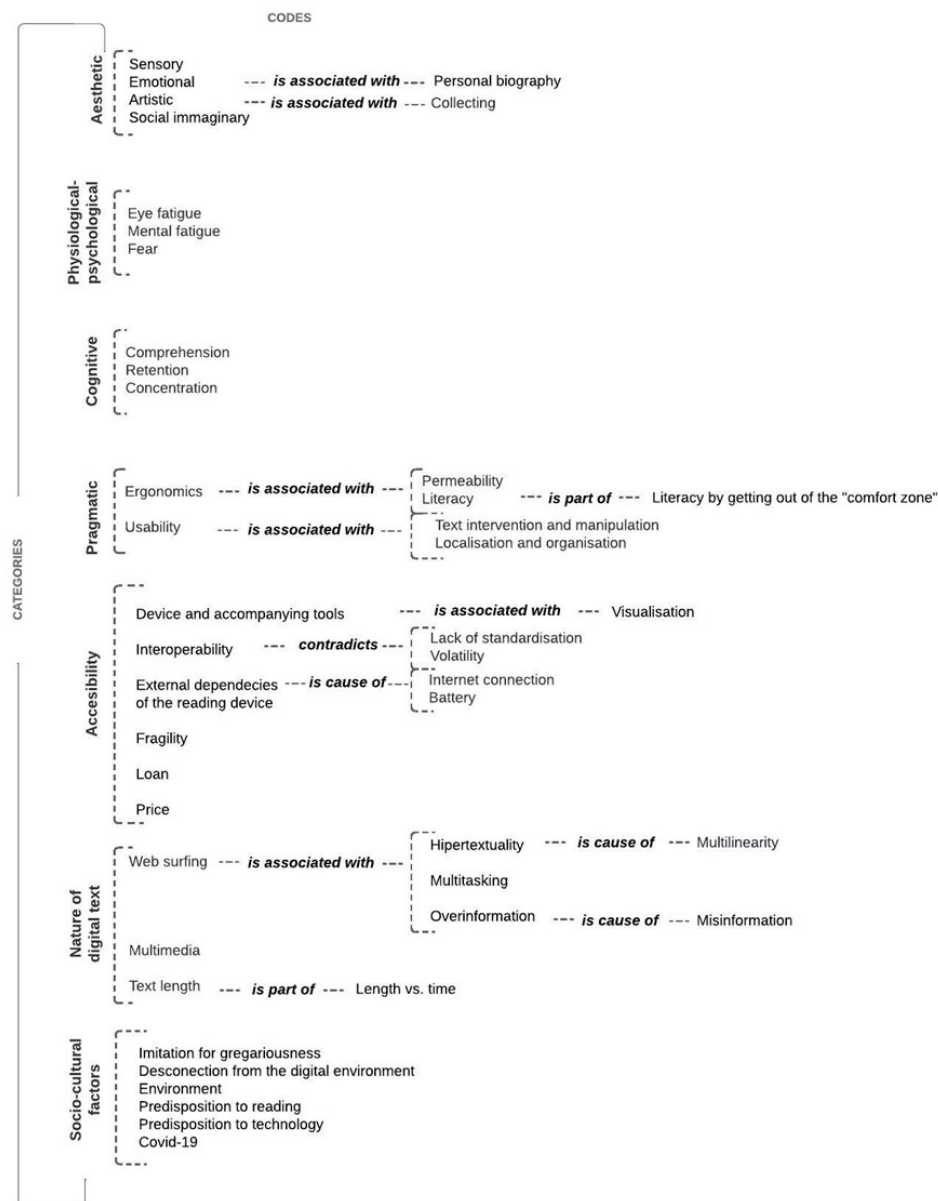
Categorisation: Identification of categories and annexed codes

A total of 45 codes defining digital reading disengagement factors have been identified in 7 key categories (see figure 2).

The main thematic criteria that characterise the categories, to which the codes or factors of disaffection towards digital reading that emerged from the qualitative analysis adhere, are described below.

The *Aesthetics* category includes all the factors related to the domain of the sensitive and the idiosyncratic conditioning factors of reading perception. The absence of materiality of the digital text as opposed to the forms of iteration haptic between the reader and the printed book - as a physical object -

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

are determining elements for the factors ascribed to this category (Mastrobattista & Merchán-Sánchez-Jara, 2022). The immateriality of the electronic text and the ontological intangibility make the phenomenological experience of reading in the digital environment substantially different from print reading from an experiential point of view (Mangen, 2008). The Aesthetic category is constituted by the following codes: Sensory, Emotional, Personal Biography, Artistic, Collecting and Collective Imaginary.

The Physiological-Psychological category includes all those aspects that compromise the reader's well-being due to the physical and psychological repercussions of reading on the screen, thus creating an attitude of detachment from the reading device that is explained in terms of "haptic dissonance" (Gerlach & Buxmann, 2011), i.e. the inequality that is observed between the two reading practices and media. The following codes are included in this category: Eye strain, Mental fatigue and Fear.

The Cognitive category includes factors that compromise the processes of assimilation and memorisation of the content of the digital text, as well as the ability to maintain sustained and concentrated reading throughout the reading practice. This category includes the following codes: Comprehension, Retention and Concentration.

The Pragmatic category brings together aspects related to the level of functionality of the reading media implemented in reading practices (Mastrobattista & Merchán-Sánchez-Jara, 2022). It includes, for example, problems of device operability that may compromise some interactive activities considered basic or essential to guarantee the reader a pleasant and satisfactory reading experience. The codes identified in this category are Ergonomics, Permeability, Digital literacy, Literacy when leaving the "comfort zone", Usability, Text intervention and manipulation, and Location and organisation.

The Accessibility category includes all those factors that hinder access to digital reading and that predetermine the level of operability and performance of the digital environment as opposed to paper for issues related to the following identified codes: Devices and auxiliary tools, Visualisation, Interoperability, Volatility, Lack of standardisation, External dependence, Internet connection, Battery, Fragility, Lending and Price.

The category Nature of digital text refers to the peculiar characteristics of digital text whereby the user perceives discomfort during reading when using and becoming familiar with the text in the attempt to achieve reading objectives and perform different tasks. The codes included are the following: Navigation, Hyper textuality, Multimediality, Multitasking, Over information, Under information, Text length and Text length vs. time.

Finally, the category Sociocultural Factors concerns those external factors and stimuli that influence the reader's choice of reading medium between print and digital. The codes identified are the following: Environment, Imitation by gregariousness, Disconnection from the digital environment, Covid-19, Predisposition to reading and Predisposition to technology.

With respect to the issues mentioned above, figure 3 indicates the maximum level of co-occurrence established between the categories, which allows us to infer that the factors included in each category interfere and interact with each other despite their belonging to different groups due to their semantic properties.

Figure 3

Cooccurrence of categories
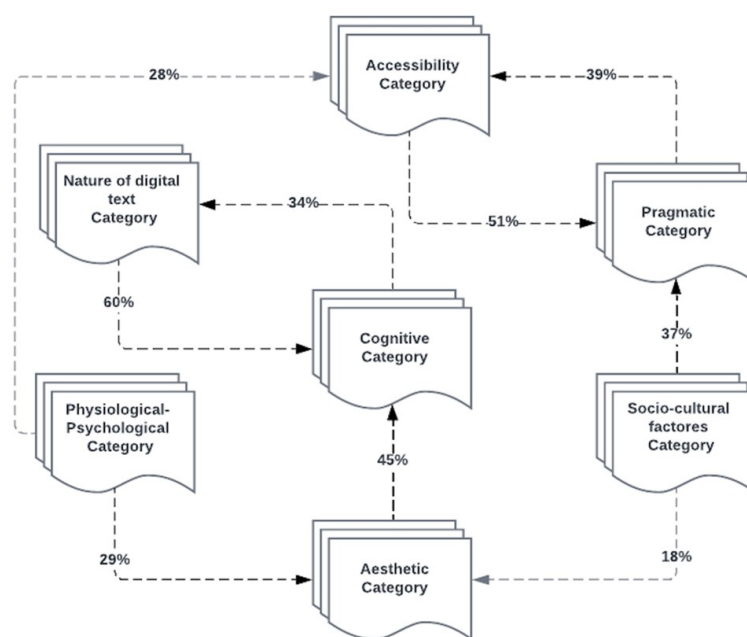
Frequency and prevalence analysis of factors

Table 8 indicates in decreasing order the level of occurrence of the codes mentioned by respondents as reasons for disaffection with reading on digital devices. An average has then been estimated according to this occurrence to highlight the most frequently mentioned factors to be considered as representative of a certain behaviour.

Table 8

Average occurrence of codes

Codes	Occurrence	%
Sensory	44	8.7%
Retention	38	7.5%
Text intervention and manipulation	35	6.9%
Concentration	31	6.1%
Collecting	25	4.9%
Emotional	25	4.9%
Eye fatigue	23	4.6%
Interoperability	21	4.2%
Visualisation	18	3.6%
Artistic	16	3.2%
Comprehension	16	3.2%

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

Codes	Occurrence	%
Permeability	16	3.2%
Literacy	14	2.8%
Usability	14	2.8%
Multitasking	14	2.8%
Lack of standardisation	11	2.2%
Loan	11	2.2%
Localisation and organisation	9	1.8%
Devices and accompanying tools	9	1.8%
Imitation for gregariousness	9	1.8%
Personal biography	8	1.6%
Disconnection from the digital environment	8	1.6%
External dependencies of the reading device	7	1.4%
Length vs. time	7	1.4%
Text length	6	1.2%
Covid-19	6	1.2%
Social imaginary	5	0.9%
Fear	5	0.9%
Literacy by getting out of the "comfort zone"	5	0.9%
Ergonomics	5	0.9%
Price	5	0.9%
Predisposition to reading	5	0.9%
Environment	5	0.9%
Fragility	4	0.8%
Hypertextuality	4	0.8%
Predisposition to technology	4	0.8%
Multilinearity	3	0.6%
Misinformation	3	0.6%
Mental fatigue	2	0.4%
Internet connection	2	0.4%
Battery	2	0.4%
Volatility	2	0.4%
Overinformation	1	0.2%
Navigation	1	0.2%
Multimedia	1	0.2%
Average	**11.22222222**	**2.2%**

The red box shows the codes with an above average representation.

The following is a description of the main thematic criteria characterising the most repeated codes - or factors of disaffection towards digital reading - from the qualitative analysis according to the estimated mean.

The Sensory code (8.7%) refers to factors related to the materiality of the text and tangibility in the haptic interaction between the reader and the medium. The absence of these components in digital reading, due to the virtuality of electronic text, leads to less immersion and connection of the reader in the content of the text.

The Retention code (7.5%) refers to the reader's ability to remember the content of a text. This process is challenging in the digital environment because reading is characterised as a cognitively crucial multidimensional space for the reader (Thomson et al., 2018). In this regard, interviewees claim to retain information better on paper than in digital, due to its physical and tangible nature. Thus, the process of manual annotation on print increases the level of focus and assimilation of the content of a text.

The code Text intervention and manipulation (6.9%) refers to the level of operability and manageability in the digital environment of the processes of annotation and text marking, as well as navigation between chapters, consultation and access to the table of contents, among others. The data show how digital devices lead to a perception of less operability and manageability of the e-book compared to the physical book, with the result of a less pleasant and cognitively satisfactory reading experience.

The Concentration code (6.1%) refers to the attitude that the reader assumes during reading practice, which can be more or less sustained and constant with respect to the influence of external distracting factors. Thus, the digital environment makes it more difficult to concentrate than print reading, where the reader can maintain a more constant and deeper level of concentration. On the contrary, factors such as multitasking like reading e-mails, chatting online, consulting several web pages at the same time, among others, especially diminish the reader's level of concentration.

The Collecting code (4.9%) refers to the activity of storing and semi-public exhibition of books by readers for aesthetic and emotional reasons linked to the printed medium. According to the interviewees, the habit of collecting books is contingent on their materiality, and, therefore, a digital collection cannot compete because of its immaterial nature. Therefore, the habit of storing printed books on one's own bookshelf is a consequence of the emotional attachment and sentimental value that reading a particular work brings to the reader, and from which he or she does not want to part with "physically".

The Emotional code (4.9%) refers to the hedonic-emotional benefits that the paper book provides to the reader for reasons of personal attachment (Mastrobattista & Merchán-Sánchez-Jara, 2022). Emotional factors are mainly lost due to the virtuality of the text in the digital environment, which is consequently perceived as a non-concrete object, physically separated from the reader and impossible to possess. In this sense, it can be inferred that the sentimental value of the book depends especially on the sensory sphere that characterises it as a physical object, so that other forms of non-tangible textuality are not accessible to the reader from an emotional and affective point of view.

The code Eye strain (4.6%) refers to reading discomfort in the digital environment due to the brightness and sharpness of the screen. This issue is widely discussed and argued by users when referring to the factors that predetermine reading preferences between print and digital. Therefore, the eye fatigue that readers report is a consequence of the use of electronic media and is a decisive consideration in the selection of the reading medium itself.

Interoperability (4.2%) refers to the ability of electronic systems and software to share data and enable the exchange of information between them. However, users encounter problems downloading or accessing texts protected by Digital Rights Management (DRM), as well as other types of limitations set by platforms or companies, thus failing to comply with the principle of interoperability.

The code Display (3.6%) refers to the quality of text reproduction through the screen which can determine various levels of readability and its implied effects on the reading process. In this respect, respondents encounter problems at the level of digital text display, for example, when they adjust the size of the letters through the zoom function to improve their legibility, which in turn modifies the view of the text, preventing them from viewing the whole page.

The Artistic code (3.2%) refers to the aesthetic aspects of the book that attract and stimulate the reader's interest, for example, the cover, the embossed title, the design and illustrations in the text, among others, which have a significant loss of power of attraction, in the visual sphere, in the translation from print to digital media (Merga, 2014).

The code Comprehension (3.2%) refers to the reader's cognitive skills with respect to assimilating and learning the text. The tasks involved in reading, in terms of the process of comprehension and

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

interpretation as well as text manipulation, are logically linked. Therefore, to establish adequate digital reading strategies, it is first necessary to find ways to facilitate the process of manipulation and affordances of electronic devices to achieve comprehension and interpretation skills in this environment (Siemens et al., 2011). In this sense, text comprehension, memorisation and retention can be inhibited by the lack of sensorimotor signals that are absent in the digital reading process (Mangen & Kuiken, 2014; Mangen et al., 2019). As for this aspect, interviewees express their preference for print reading according to their comprehension skills.

The code Permeability (3.2%) refers to the impossibility of the digital device not being "penetrated" on a sensory-emotional level by the reader, who perceives different "degrees of distancing" towards the text due to the functions and performance of the reading support (Cordón-García, 2019). In this sense, digital reading devices do not create any kind of direct link between the reader and the text, but rather represent impenetrable barriers compared to the reading of a printed text that manually and emotionally involves the reader in the development of the reading practice.

The Literacy code (2.8%) refers to the level of skills and knowledge acquired by users to interact with electronic devices and their functionalities. In this sense, respondents consider it necessary to have a certain level of digital literacy to be able to interact with electronic devices and take advantage of this knowledge to make a more appropriate and effective use to achieve their reading goals. However, part of the sample claims not to have acquired this knowledge in training contexts, but through their own experimentation and initiative, so they recognise that their deficiencies in this field are representative of the reason why they feel less inclined towards the digital format for their reading practice.

The code Usability (2.8%) refers to the user's ability to interact with the device to achieve their reading goals. In this section, respondents agree that the digital environment is not yet as user-friendly in terms of intervention and manipulation of the text and also in terms of locating and organizing readings in the digital/virtual environment compared to the physical placement of books on shelves.

Multitasking (2.8%) refers to the ability to multitask simultaneously, usually via digital devices. According to the data, the ability to multitask via digital media inhibits the level of concentration during reading.

The missing code of standardisation (2.2%) refers to the diversity of file formats in terms of systems for displaying and accessing digital text. In this sense, digital texts depend on machines and computer systems that are in continuous development and, consequently, imply a constant level of learning and updating of the skills needed by users to handle them properly (Siemens et al., 2011).

Finally, the code Loan (2.2%) refers to the digital book lending system, how it works and the level of access by the reader. In this area, the process is slow, complex and cumbersome due to the terms and conditions set for accessing digital lending. In addition, the availability of titles in digital format is limited and the loan period is short or insufficient. For these reasons, some interviewees say that they are inclined to explore other online libraries with illegally acquired collections, where they can find a greater quantity of materials, even if they are of lower quality.

Code co-occurrence analysis

In the code co-occurrence analysis (see figure 4), the Sensory-Retention code, belonging to the Cognitive category and the Aesthetic category, represents the co-occurrence with the highest level of frequency highlighted in the qualitative analysis of the interviews, with a value of 5.9%. Thus, these two factors are the most frequently mentioned by the interviewees, and their mentions occurred in the same quotations (13 quotations, equivalent to 5.9% of the total co-occurrence of codes). Objectively, the participants pointed to a poorer retention of information in the digital environment due to the lack of sensory aspects in electronic texts.

Code co-occurrence analysis
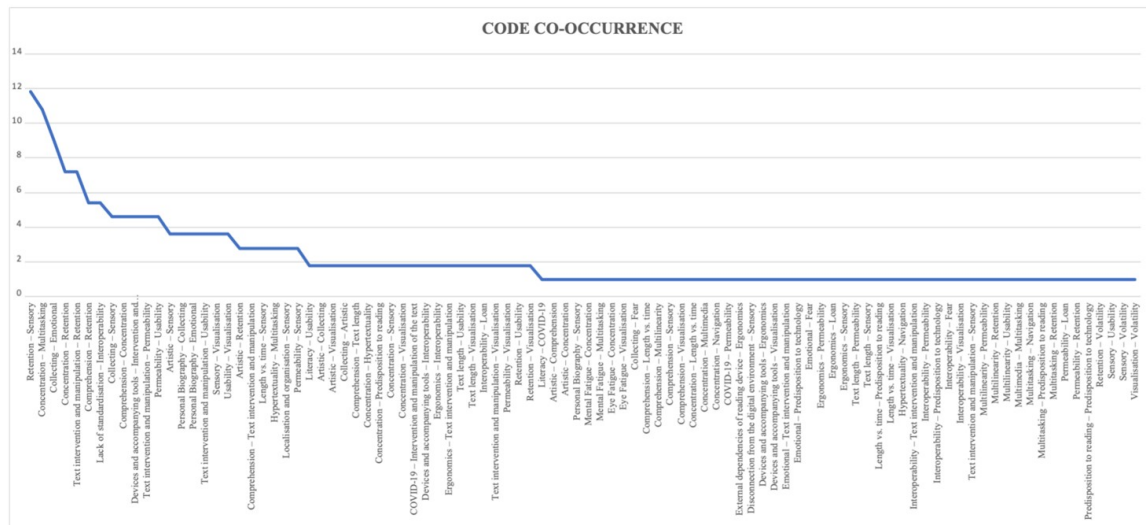
CONCLUSIONS

The factors of disaffection towards digital reading identified, and the qualitative analysis of their significance and implications, allow us to establish a structure of categories and subcategories that interrelate and put into context the multiple issues and situations that explain the disaffection towards the reading experience through digital devices, and the resistance and revaluation of traditional print media in a context such as the current one marked by the exponential digitisation of societies. The data provided reveal and confirmed certain trends and perceptions gathered previously in the scientific literature and lay the foundations for the conformation of digital reader profiles through the application of methods based on multivariate analysis. It can also be concluded that the debate between analogue and digital reading has shifted to the level of certain conjunctural contexts, which privilege each of these practices according to the most valued characteristics of the printed or digital media. In particular, it is worth noting the over-representation of those individuals who reject digital for various reasons on the sensory level, with strong implications for the cognitive mechanisms related to reading, and their direct involvement in the emotional sphere. From this perspective, most of the participants pointed directly to a poorer retention and comprehension of information in the digital environment caused by the undervaluing of sensory stimuli in electronic texts.

Finally, it is worth highlighting the impact of digital ecosystems, and therefore the practice of digital reading, in the field of education, as they inevitably promote new ways of thinking, because of the new epistemic cultures that the digital transformation of the knowledge society has brought about (González-Gutiérrez & Merchán-Sánchez-Jara, 2022). In this framework, knowing the factors of detachment from digital reading is an invaluable asset in the field of teaching innovation in higher education because, as Cordón-García (2019) states, to understand what role digital reading should play in the educational environment, it is also necessary to consider the particularities of this practice and the best ways to carry it out. Therefore, it is essential for educational institutions to adopt measures to promote reading and reading comprehension adapted to the needs that arise from reading habits in the digital environment, as well as to adapt and reformulate the supply of digital resources and institutional repositories so that they are semantically adapted to and facilitate the teaching-learning processes in the context of higher education.

Javier Merchán-Sánchez-Jara, Ludovica Mastrobattista, María Muñoz-Rico, Sara González-Gutiérrez, José Antonio Cordón-García

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María Muñoz-Rico: Formal analysis; Data Curation; Writing - original draft; Research; Supervision; Visualization.

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