

Textual Accessibility, Consumption Experiences and Scenarios of Literacy Through Audiobooks: What Can Be Learnt From the Public of Blind and Partially Sighted Persons

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Abstract

Widespread in recent years, and as an accessibility tool for persons with disabilities, audiobooks can change the relationship with texts and prefigure new scenarios of literacy. The contribution aims to investigate these implications, with a lens of theoretical and educational linguistics. Specifying what is present in international literature, advantages and possible risks connected to audiobooks are hypothesized, with reference to expository and argumentative essays. It has been carried out a survey in collaboration with an Italian association of Blind and Partially Sighted persons, the "*Unione Italiana Ciechi e Ipovedenti*", considered as an audience with a specific expertise of this medium who may anticipate the future trends for the whole population. 147 anonymous responses to an electronic questionnaire have been collected and analyzed: the results, while confirming the attention points and some problems, at the same time propose possible strategies to overcome them. Significantly, listening is not considered as a limited consumption experience, but as a new, alternative use setting.

Keywords: Accessibility, Audiobooks, Cognitive engagement, Literacy, Reading experience

1. Audiobooks in Contemporary Communication

1.1 A New Sociolinguistic Dimension of "Reading"

The investigations on audiobooks, which have recently begun, converge in highlighting how they are increasingly loved since the Tens of this century. During the Covid-19 pandemic,

there was a further strong increment in demand. In the world, the available data quantifies the phenomenon with double-digit percentages, with a range from 10% of the population in Portugal to 42% in China and 44% in India. In Europe, many countries stand at percentages like Italy (17% in France, 20% in Austria, 23% in Spain, 28% in Germany, just to name a few), but in some areas, such as Sweden, peaks in sales have been recorded. Moreover, the consumption of audiobooks is expected to continue to grow in the coming years, also thanks to positive actions in favor of those with a visual disability or a Specific Learning Disorder (in the following: SLD) (Bashir, 2024, Fundación GSR, 2024, Technavio, 2024, APA, 2024).

Beyond the fluctuations in numbers, presumably also due to differences in survey tools and reference samples, this is an important phenomenon, especially if we look at the qualitative data. The growth of audiobooks does not occur at the expense of traditional reading: the majority of those who use them also read paper books or, to a lesser extent, e-books. Rather, in the perception of those who access it, this medium allows to enjoy more cultural products and to get to know new authors. There is a complementarity between audiobooks and paper books as a driving factor for the publishing industry; the public is transversal and includes those who usually listen to these contents and those who, always with percentages equal to or greater than 25%, do so once a week or once a month (see Audible, 2023, 2024). While e-books are read mainly in the evening, audio books are enjoyed from daytime to nighttime hours, also thanks to the possibility of listening while doing other activities or moving around the city (Tattersall Wallin & Nolin, 2020, Fundación GSR, 2024). Among the most popular genres, narrative texts and popular fiction take the lead, with variations in preferences, in individual countries, for more specific genres (romance novels, thrillers, fantasy). The spread of streaming platforms and the availability of subscription options allow to monitor how the audibles are listened; the Average Finishing Degree (AFD) indicator has also been developed, which measures the average number of users who complete listening to the end. Thanks to these tools, behaviors such as repeated listening or browsing between different contents have been recorded (that is, exploring multiple books before deciding to commit to enjoying one in particular) (Fundación GSR, 2024; Audible, 2024).

In turn, consumption data influences investments: audio versions are created and offered especially of genres that meet the public's greatest preferences, with the effect of accentuating current trends.

1.2 What Happens When Mediating From Written to Spoken Texts

Audiobooks represent a form of mediation from a written to a spoken text, involving a human or an artificial voice interpreting and delivering a message originally developed in a different medium (see North & Piccardo 2016). In recent decades, the idea has become established that the written channel favors certain cognitive postures rather than others; in particular, some scholars have introduced the concept of an alphabetic brainframe, which spread in the modern age thanks to printing technologies, which would have gradually modified the way in which the message is conceived and received (De Kerckhove, 1993, Riva, 2012, Palermo, 2017). Writing would therefore be a particular mental pattern within which to place and interpret the words: during its millenary history in the many civilizations in which it evolved,

it encouraged conceptual abstraction, deductive reasoning, metalinguistic reflection and hypotaxis; it developed decontextualized thought, tending towards universalism. Furthermore, writing would have promoted documentary and metacognitive practices (Olson & Torrance, 1991; Corno, 1996; Simone, 2000).

In this research framework, audiobooks are a factor of change that is not yet sufficiently defined. A medium-specific and medium-sensitive analysis of them, recently called for (Have & Pedersen, 2021), should consider, in a multidisciplinary perspective, the linguistic aspects of mediation, the cultural and sociolinguistic correlations with use settings, the cognitive implications of the auditory experiences compared to the visual ones, the educational potential and risks. It would be simplistic to affirm that the phenomenon is a mere ‘going back’ with respect to the processes just summarized above, triggering a sort of “new age of orality” (Bednar, 2010), because the trace of the sound stimulus remains the original writing. But it would be equally misleading to think that the passage from one channel to another is neutral. Reading aloud from originally written texts is not new, but the dimensions that the phenomenon has assumed today and its combination with digital technologies increase its potential impact and prefigure new scenarios of literacy.

These questions can be furtherly specified, assuming a perspective of textual accessibility, consumption experience and cognitive engagement, as in the following:

- (I) How the strategies associated to intensive reading, which include focused attention and concentration, active processing and interpretation, analytical and critical thinking, manifest in this medium
- (II) How impactful is the limited control over pacing, re-reading (re-listening), and note-taking (as pauses and reread sections are often needed for deeper understanding)
- (III) Whether internalized narration and visualization occurs, as it is described by readers who create their own "internal voice" and visualize scenes, characters, situations based on the written descriptions
- (IV) Whether a passive reception is favored by an auditorial experience, where the listener receives the interpretation already provided by the voice, potentially reducing the active construction of meaning; whether the emotional response is influenced by the voice's tone and emphasis
- (V) How the potential for multi-tasking influences the consumption experience, as audiobooks can be listened while performing other tasks, potentially leading to divided attention and a less focused cognitive engagement with the content
- (VI) Whether the lack of visual cues contributing to meaning-making, such as punctuation, formatting, paragraph breaks, page layout, is compensated, both by the voice and the listeners
- (VII) To what extent the awareness of possible audible re-publications of the books causes changes in the authoring processes, and the adoption of sentence structures,

vocabulary, and pacing that are characteristic of spoken language

- (VIII) To what extent the text type correlates with the above dimensions, considering the difference between fiction and non-fiction
- (IX) What are the main consequences that audiobook consumption has on the scenarios of literacy, with reference to the whole population and its different groups.

Audiobooks can contribute to answer more general semiotic questions, such as the correspondence between punctuation and prosody and manifestation of multimodality in printed books (Kress, 2010).

1.3 Some Coordinates Coming From the State-of-the-art

The available scientific literature has been initially strongly addressed to market studies, changes in the publishing industries and, to a lesser extent, to psychological and text processing aspects. An overall subject of debate is whether the listening of audiobooks represents a superficial activity, not as intense as traditional reading is, an activity that should be defined by ‘subtraction’ compared to what happens on paper or on video with e-books.

The issue crosses different dimensions. Under an historical point of view, modern cultures anchored to the printing technologies consider the traditional book a sort of “gold standard” of the alphabetic brainframe; audiobooks themselves are part of an institutionalized context formed by authors, publishing houses, literary traditions, bookshops, libraries and so on (Ponte Di Pino, 2019, Have & Pedersen, 2021, Baron, 2021). This context partially justifies the broad naïve approach of viewing audiobooks as a “secondary” product. Indicators of concern came also from experimental evidence. Some trends observed in the United States have been summarized as follows (Baron, 2021; Daniel & Woody, 2010):

- Audio is more commonly associated with lower comprehension;
- With audio, one is less likely to re-read (re-listen);
- Audio is associated with greater mental wandering and less memorization;
- Carrying out other activities while listening can reduce concentration;
- With audio, one has a less truthful perception of what one has memorized (problematic self-assessment).

However, there are limitations of the studies leading to those conclusions which entail great caution when referring to audiobooks. The few investigations focused on audible informative texts in educational environments, such as lessons recordings at university, highlighting the habit to accelerate the speed or the lower propensity to re-listen, lack a term of comparison, as no written track is available. Even when it is, because transcription has taken place, the sampling is very small and the experience remains different in nature, as the origin is an oral production, with its call for an immediate consumption.

On the other hand, a parallel line of research uncovered several potential benefits related to audiobooks. For typically developing learners, it has been suggested that they can positively

impact word recognition, comprehension, vocabulary acquisition, and overall reading achievement. Exposure to fluent narration can provide models for pronunciation, intonation, and phrasing. In addition, challenging the assumption of a superficial text experience through audibles, some scholars claim that this medium develops active listening attitudes and attention, skills that are transferable to other academic and social contexts, and enable learners to concentrate on understanding the text without the cognitive load of decoding it. This would foster visualization, inference-making, and the ability to predict outcomes, thus enhancing critical thinking. A general broadening of knowledge and of pragmatic competences has been argued (Wolfson, 2008, Grover & Hannegan, 2011, Rizal et al., 2022). Under an emotional point of view, some studies also report an increased engagement and motivation, especially for students who have difficulty focusing on text, or adolescent and adult weak readers (McAllister et al., 2014, Moore & Cahill, 2016, Tusmagambet, 2020).

For individuals with visual impairments or SLD, audiobooks have been proved to bypass (or alleviate) the burden of decoding and allow them to access the content at the same level as their peers. This would promote inclusivity and reduce frustration associated with reading. Cognitive resources could be better committed on understanding and remembering the material. In particular, in pre-adolescents and adolescents with dyslexia, it has been shown a psychological adjustment making a significant improvement in reading accuracy, with reduced unease and emotional-behavioral disorders, as well as an improvement in school performance (Milani et al., 2010).

Even if this set of studies, mostly under a psycho-pedagogical and information science perspective, pursues a comparison between traditional and alternative means of exposure to texts, in many cases the used materials were created specifically for the classroom, as educational tools for first and second language teaching. Numerous gaps have been recognized in examining the effectiveness of audiobooks. In addition, the great variability in outcomes may depend on disparity in the applied methods, which individually do not base generalization, nor when limited to the subgroups (adolescents with visual impairments or learning disabilities, adolescent second language learners, and typically developing adolescents). For such reasons, a systematic literature review on this domain of inquiry points to the need for much more research (Cahill & Moore, 2016, Best, 2020). With direct reference to questions I-IX illustrated in par. 1.2, a pivotal gap must be noted in the absence of question VIII and the almost total silence on non-fiction essays. The cited analyses do not correspond to a medium-sensitive one, if under the category of audibles fall various media, which demand targeted evaluation. Nor they can equal a medium-specific one, which would imply a semiotic and linguistic approach in the design of investigations.

Precisely bringing the discourse back to questions I-IX, from the current state-of the art and regardless the different value judgements above synthetized, some coordinates can be extracted, which I propose in the following. While audiobooks are widely recognized as a challenging tool for the whole population, the magnitude of their impact on literacy can differ. A dichotomy that deserves more attention is audiobook as a compensatory vs. supplementary tool. For learners with visual impairments and SLD, audiobooks often serve as a compensatory strategy, allowing them to access information they might otherwise struggle

with and freeing up other resources for comprehension. For typically developing learners, instead, audiobooks often act as a supplementary tool to enhance learning and engagement. Other dimensions, such as the cognitive load, can vary accordingly.

The public who enjoys the texts should be assumed as an important factor when specifying the preliminary hypothesis, data collection procedures and their discussion. In fact, also addressing the research questions about the reading experience, a possible bias of the respondents must be taken into consideration. When involving persons with no visual impairments or SLD, the perception of audiobooks may be influenced by the parallel full accessibility of printed books or e-books. That is, in this case the cultural “gold standard” applies both at a social and an individual level.

Another factor, often misunderstood or underestimated, is the text type. Many studies do not consider it or limit their analysis to the fiction books. On the contrary, it could be interesting to investigate how non-fiction essays, including scientific or abstract concepts, challenge the audio experience in its problematic relationship with traditional reading or e-reading. Available data suggest that, in this case, it could be particularly difficult to fully understand the message, but it is crucial to collect further evidence on that (Daniel & Woody, 2010, Best, 2020).

A third factor which appears crucial for a medium-specific analysis is the overall technology infrastructure which supports the audio experience (Have & Pedersen, 2021). While many studies consider the nature of the voice, either artificial or human, in determining the overall quality of the audible, other issues are not sufficiently addressed, such as the possibility to customize the text consumption (for example stopping, or re-listening, the audio material). In addition, some platforms offer synchronized text highlighting and adjustable playback speed, which can be particularly beneficial for persons with visual impairments or SLD. These features might be less critical for typically developing learners in their first language acquisition. In general, it is desirable that annual institutional reports of Publisher Associations devote greater attention to the qualitative analysis of emerging habits (Ponte Di Pino, 2019; Fundación GSR, 2024).

When assessing all its dimensions, it seems possible to embrace a complex vision of the phenomenon, which opens up to the construction of models alternative to the “gold standard”. The three mentioned factors inform the hypothesis and the design of the research illustrated in the following paragraph.

1.4 Case Studies and Theoretical Hypothesis

As a general outcome of the state-of-the-art, it is necessary to base the analysis of such a multidimensional phenomenon on an adequate availability of data, of which there is still little and in a non-uniform way. Both positive and negative aspects associated with the spread of audiobooks should be detailed according to systematic evidence, collected, and interpreted under explicit research questions. The present investigation aims at addressing the questions specified in par. 1.2, assuming the following hypothesis:

- non-fiction contributions represent a stress test for the accessibility of audiobooks,

due to the frequency of “unspeakable” or “partially speakable” practices in the written texts. Abstract conceptual categories and hierarchies, which are particularly challenging for text processing and learning, require comprehension strategies comparable to those made in intensive reading, which must be activated in different forms. The medium may therefore entail significant adjustments, which may be facilitated/complicated by the technology infrastructures.

To articulate the hypothesis, two preliminary case studies have been conducted.

It is known that expository and argumentative texts can be very complex in semantics and syntax. It is no coincidence that while reading manuals or scientific articles in print or on video, eye movements called “regressive saccades” and “fixations” are frequent: the more difficult the task, the more one goes back with the eyes and stares longer at unfamiliar words. Furthermore, these types of text are the ones that are most often annotated: key sentences are underlined, circled, etc. (Baron, 2021). When dealing with persuasive discourse, some scholars have spoken of “unspeakable” or “partially speakable” practices, thus referring to those portions that cannot be orally expressed (Colombo, 2002). Expanding on the examples examined in literature, I propose an integration of them in table 1, which is the result of a case study on a sample of printed essays and their spoken version: the first column lists the forms/structures; the following columns list the solution found in versions with either artificial or human (professionals’) voices; finally, the last column reports other solutions, technically practicable but not found.

Table 1. “Unspeakable” or “partially speakable” practices in expository and argumentative texts

<i>In printed books</i>	<i>In audiobooks (artificial voice)</i>	<i>In audiobooks (professionals' voice)</i>	<i>Other technically practicable solutions</i>
bulleted lists	No audio expression	only if numbered 1-2-3 or a-b-c	Repeated beep (to indicate a bullet point)
images, photographs, diagrams, tables; layout elements (arrangement on the page)	No audio expression	No audio expression	audio description
Breaks (space between paragraphs, to mark a thematic break)	No audio expression	sometimes not expressed at all, sometimes expressed with a longer pause	
Bold and italics to indicate important	No audio expression	No audio expression	Voice volume or pitch

passages			
Punctuation	Frequent inaccuracies in prosody and intonation	pauses, prosody and intonation	
Short or long quotations	No audio expression	No audio expression	change of voice, sound signal
Secondary content in brackets or asides	No audio expression	sometimes skipped, sometimes expressed with appropriate intonation	
paragraphs, titles, subtitles, paragraphs	No audio expression (like headings)	For titles and subtitles, managing pauses before and after	
footnotes, glosses	No audio expression	No audio expression	Availability in a section that can be browsed separately
Links, hypertext	No audio expression	No audio expression	Availability in a section that can be browsed separately

In the second and third columns, gaps in oral expressions risk losing elements to order and hierarchize the information, an operation which is proved to contribute to memorization and learning processes.

As an additional case study, I analyzed some informative podcasts, which represent native audio contents, defined as a digital textual information that is conceived, authored, and structured primarily for auditory consumption and dissemination, bypassing traditional publication formats (e.g., print, on screen). While the final output is audio, the underlying composition originates as written text, thus distinguishing these podcasts from spontaneous spoken discourses. Namely, I analyzed “Circo Massimo” (by Massimo Giannini) and “La giornata” (by Laura Pertici), both daily popular journalistic contents, distributed by “La Repubblica”, one of the most widely established newspapers at a national level. The person who reads aloud is the same who created the prior track; a professional production ensures a high sound quality, possible background music or audio effects and the editing of quotations within the main text (in the case in which, for example, clips of interviews or parliamentary speeches need to be reproduced). Table 2 summarizes the solutions practiced; in the first column, the forms and structures already examined in Table 1 are copied for comparison.

Table 2. Solutions found in native audio contents (expository and argumentative texts)

In the written track (reconstruction)	In native audio contents
Unspeakable or partially speakable practices are limited from the beginning: it can be assumed that there are no bullet points (or only with progressive numbers); there are no images, photographs, infographics and layout elements	
Breaks (space between paragraphs, to mark a thematic break)	Special audio marks (short successions of a few notes)
Bold and italics to indicate important passages; punctuation	Intonation perfectly conveys emphasis and nuances of meaning, as well as syntactic structure, since the person reading aloud is the same person who wrote the written track
Short or long quotations; secondary content in brackets or in parentheses	Inserts (e.g. original audio of statements by political figures); explanation of the textual status (e.g. «let's add in brackets that...», «to quote...»)
paragraphs, titles, subtitles, paragraphs	Special audio marks (short successions of a few notes)

2. Method

2.1 Participants

The investigation has been carried out in collaboration with the *Unione Italiana Ciechi e Ipovedenti* (U.I.C.I.). Founded in Genoa in 1920, the association has been working throughout Italy for over 100 years to support blind, partially sighted and people with additional disabilities, promoting equal rights, accessibility and social inclusion, autonomy, and mobility. Recognizing as a primary objective the search for common strategies, both nationally and internationally, U.I.C.I. is part of the European Blind Union (EBU), the World Blind Union (WBU) and the Federation of National Associations of the Disabled (FAND). It is structured in Territorial Sections present throughout the Italian territory which, grouped in the Regional Councils, make up the National Council.

U.I.C.I. offers the service “Centro Nazionale del Libro parlato” (CNLP) (National Center of Audiobook) which guarantees a tool for cultural and social emancipation; the CNLP is an authorized Entity, pursuant to Italian and European laws and regulations on copyright. The service is aimed exclusively at visually impaired people who meet the requirements set out in

Italian Law 138/2001, who must submit suitable certification upon registration. Audiobooks are produced either by professional actors (first level works), who access the facilities within the studios in Rome, Florence, Lecce, Brescia, Modena, Ascoli Piceno and Naples, or by volunteers (second level works), who make their time available and record the audibles with their own non-professional means. The produced audiobooks can be listened via specific applications that support advanced navigation features or via the applications commonly available for smartphones with the main operating systems.

There are several reasons why the collaboration with this public has been considered as particularly relevant.

First, it is possible to observe what happens when the “gold standard” is removed, and the consequent possible related bias by the respondents. Persons with visual impairments can more directly witness the multidimensional shift (cultural, sociolinguistic, and strategic) required by the medium. Of course, when saying “more directly” there is the awareness of the non-neutral character of the answers and of the role that psychological factors play in any investigation of perception or user experience, particularly in the case of frail or disabled people. Nevertheless, it is reasonable to assume that they have developed an advanced perspective of the aspects involved in audiobooks, consuming them in a continuous way as a privileged source of information and entertainment.

In addition, this group may allow to study the scenarios of literacy stimulated by audiobooks, more than can be done with the those who leverage the medium as a supplementary tool: for the latter, any consideration on the effects (positive or negative) of audibles must be evaluated against the possibility that one has, in parallel, of enjoying printed books or e-books. When audiobooks are meant as a compensatory tool, users may develop a full awareness of any gaps compared to the traditional reading experience, especially if they have grown up and been educated in that experience. The possible existence of those gaps and the necessity to overcome them may drive a qualitative analysis of the implications and a medium-sensitive analysis. The selected participants are motivated to understand the possible barriers that may arise to textual accessibility, and this encourages the critical interpretation and the reporting of any problems. In general, engagement in contributing to a scientific research on audiobooks may be much greater.

Specifically dealing with text types, the hypothesis outlined in par. 1.4 can be better addressed with blind and partially sighted persons. While typically developing students and adults with no disabilities have a limited familiarity with non-fiction audiobooks (being the periphery of the market of audibles), the selected group has access, thanks to the CNLP, to a wide catalogue of essays, scientific contributions, journals, manuals, historical treatises, monographs, and main studies in disciplinary literatures.

2.2 Design of the Questionnaire

The questionnaire has been designed with the active participation of a senior member of the Association U.I.C.I, who advised and contributed to the wording of titles of the sections, questions, and options. The following criteria were jointly defined:

- Reaching a reasonable length of the questionnaire, and its individual sections, so that they do not require excessive effort to be completed
- Worded the questions for them being easy to understand, readable and unambiguous. Technical terminology and complex sentence structures were avoided
- Tending to isolate one aspect per question
- Providing the full range of options, from negative to positive feedback
- Framing the items trying to elicit honest responses
- Preferring neutral titles of the sections.

Through the companion pages of the questionnaire, respondents are informed on the involved university, the mode of participation (voluntary and anonymous), and the objectives (for scientific research only).

The questionnaire is structured as follows:

- Section 1: Personal Data and use of audiobooks
- Section 2: Habits in using audiobooks
- Section 3: Comparison between traditional printed book and audiobooks: personal experiences
- Section 4: Getting Informed and learning through audiobooks
- Section 5: Preferences in using audiobooks
- Section 6: Suggestions

People who do not use audiobooks (identified through a specific question at the end of section 1) are directly addressed to Section 6. Section 3 is not proposed to those who have developed a visual disability since birth or in early childhood. These people (identified through a specific question at the end of section 2) are directly addressed from section 2 to 4. A linear progression is then followed.

2.3 Invitation Procedures

In June 2024, a consultation with the Rome Territorial Section of U.I.C.I. was made, for sharing the objectives of the investigation and the tool for data collection. U.I.C.I. periodically distributes, for various scientific purposes and for consensus building, questionnaires in electronic format to its members, who answer using the aids dedicated to them. For the administration, a dedicated application was chosen, already known among the public of U.I.C.I., which generates a link for inviting participants. In July, a communication campaign targeted all the Territorial Sections of U.I.C.I., with a short text explaining the context and the method of the investigation. After joining the initiative, the Sections managed autonomously the distribution to their individual affiliates.

3. Results

In this paragraph, results are reported with the author's translation in English; the texts of the answers are reported in decreasing order of obtained preferences.

3.1 Sociodemographic Data and Subgroups

In the period from July to September 2024, a total of 147 responses were received, mostly from females (53.7%); the sample is concentrated in the over-50 age group (in detail, 16.3% from 18 to 35 years old, the same percentage from 36 to 50 years old, 34% from 51 to 65 years old and 33.3% over 65). In terms of educational qualification, high school is the most common (52.4%), followed by university (34.7%); 7.5% have primary school, while the others have a PhD or a master.

12 respondents (8.2%) do not use audiobooks. From the total of the remaining 135 people listening to this medium, 2 subgroups can be drawn based on the onset of the disease: the first is made by 71 respondents (48.3%) who are blind or partially sighted from birth or early childhood; the second by 64 respondents (43.5%) who developed the visual impairment in youth or adulthood.

The first subgroup is mostly composed of girls and women (56.3%), aged between 18 and 35 (25.4%), between 36 and 50 (22.5%), between 51 and 65 (33.8%) and over 65 (18.3%). The percentage of 43.7% has a high school degree, while another 42.3% a university degree.

The second subgroup is divided in half between women and men (32 for each sex) and is composed of people between 18 and 35 years old (4.7%), between 36 and 50 years old (10.9%), between 51 and 65 years old (35.9%) and over 65 (48.5%); the majority has a high school (57.8%) or a university degree (31.3%).

3.2 Q&A: General Statistics

In section 2 on consumption habits, it emerges that 69.3% have been using audiobooks for more than 5 years (in 22.4% of cases always, in 23.1% for more than 10 years), while the remaining 30.7% have recently approached them. 57.1% listen to this medium every day or frequently during the week, while 24.4% only in their free time; 13.3% modulate their rhythms based on the needs that arise from time to time. Among the reasons for using audiobooks, the visual impairment clearly stands out, as expected (71.1% of the responses); 17.8% of those who responded, however, already knew this sector but began to frequent it more intensely after developing the disability; in 5.9% of cases, the health problem played no role. Regarding the desires or interests that drive use, 47.4% of the sample indicated the pleasure of reading, 25.2% the desire to learn about current events, 15.6% scientific knowledge and cultural deepening. In this question, it was possible to tick several options and it is significant that a percentage of 47.4% answered "all of the above reasons".

Section 3 contains the following questions.

"In your opinion, listening to audiobooks is a less intense experience than traditional reading? (more options can be ticked)":

- “it depends on the quality of the audible and the professionalism in its production” (65.6%)
- “no, it is just a matter of habit” (23.4%)
- “it depends on the type of text (for example, if it is a novel or a scientific essay)” (21.9%)
- “yes, it is a more superficial experience” (15.6%).

Among the free text answers, some examples are the following:

- (1) “Traditional reading is preferable. A book in hand is better”
- (2) “If practiced with concentration and if the text is read well, then it can be equivalent”.

When listening to an audiobook, do you project the attitudes you have developed with traditional reading? For example, do you imagine the pages that can be turned, the colored figures, the structure of the contents of the printed book?

- no, it is a completely different way of reading (59.4%)
- yes, only in part (23.4%)
- yes, traditional reading remains my reference model (14.1%)

Among the free text answers, an example is the following:

- (3) according to those who read it, I participate intensely in audio description

In your opinion, are the following advantages of listening audiobooks over traditional reading? (1="definitely not", 2="more not than yes", 3="more yes than not", 4="definitely yes")

The audiobook does not seem to bring any advantages, except that of potential of multitasking (which gets an average score of 2.7): speed and pleasantness get an average score of 2.4, lightness of 2.3.

In section 4, the first question asks “*When you listen to an essay, a newspaper article or a scientific text, do you do (or would you like to do) some of these actions?*” (none or more than one option can be ticked; an option “other” accepts free text input):

- “re-listen to one or more passages to delve deeper” (69.6%)
- “mark the most important passages” (40.7%)
- “mentally arrange the most important information in a virtual space” (34.1%)
- “take notes (also with audio recordings)” (33.3%)
- “transcribe some passages (also with audio recordings)” (26.7%)
- “summarize (also with audio recordings)” (21.5%)

- “make lists of key words (also with audio recordings)” (12.6%)

A complementary piece of data also emerges in the next question, which asks “*To study an essay or a scientific text, would you like to have some of these supports?*” (none or more than one option can be ticked; an option “other” accepts free text input):

- “an index to remember the structure, orient yourself among the chapters and jump from one to another” (63.7%)
- “audio descriptions of the present graphs” (57%)
- “the possibility of opening other contents in parallel (for example a spoken dictionary to check the meaning of a word)” (57%)
- “the possibility of opening related texts in parallel (for example another book on the same topic)” (32.6%)
- “audio indicators (a beep or a particular sound) to describe the layout of the text (for example if there is a break between one paragraph and another or a bulleted list)” (26.7%)

To the question “*Would you recommend people who are not visually impaired to use audiobooks for studying?*” 41.5% answered yes, 36.3% answered “only if quality audible is available”, while 16.3% answered no.

Section 5 refers mainly to the use of artificial voices or non-professional volunteers: high percentages (40.7% and 37% respectively) use these tools only if there are no alternatives, but the number of those who use them without problems is still high (34.8% and 45.2% respectively); those who say they do not use them at all cite poor quality as their main reason.

Among the free text suggestions (Section 6), I would like to point out the following examples:

- (4) “I note a shortage of non-fiction titles in Italian, those that exist are merely informative, the interfaces for the blind are not easy to use and should incorporate the requirements defined by the end user”.
- (5) “The technical feature of bookmark is important, offering the possibility of re-listening to various parts of the text to facilitate memorization and if the text is read by AI there must be a good interface”.
- (6) “If the suggestions made in this questionnaire were applied, it would already be a big step forward”
- (7) “When the text is not long, the most successful experiences are those in which the author of the text himself reads it aloud, interpreting the nuances of meaning as best as possible. I like texts that summarize at different points where you find yourself in the development of the discussion, thus stimulating reasoning and giving you the possibility of making a conceptual map by yourself”

(8) “For the visually impaired, improve the control keys by making them easier to use”

(9) “For a blind person, voice commands would be excellent. Turn on, start...”.

3.3 Interpretation Keys

Section 3 isolates the second subgroup (see par. 3.1) of 64 respondents who developed visual impairment in youth or adulthood. Even considering the educational characteristics and ages, this subgroup can be insightful about the relationship between traditional reading and audiobooks, as individually perceived; the respondents can offer crucial understanding into the transition from one to the other medium, as the prevalent means of accessing culture. The interpretation of the answers must consider, on the one hand, the contrast between the two consumption experiences, as directly described by the interested subject; such testimony has a value in itself, also as psychological data and personal reworking of the activity of listening to audiobooks. On the other hand, interpretation must embed the testimony within other communicative aspects, such as the role of other semiotics (further to written verbal language, such as graphs, images and tables) in printed texts and the possible activation of comprehension strategies more directly associated with the channel, such as the visualization of situations, conceptual hierarchies, or logical relationships. For this reason, the discussion will be partly intertwined with what emerges from questions of section 4 addressing the spatial organization of contents or audio description of graphs.

These data will be situated within the theoretical questions about the strategies and the passive/active attitude triggered by the medium (see above, par. 1.2, questions I, II, III, IV and V).

In Section 4 respondents are explicitly invited, in each question, to focus on their consumption of audiobooks for information, learning and argument. The questions on technical features are aimed first at bringing out aspects of posture in the processing: in prefiguring possible (or none) actions to be done on the text, while listening to it, the underlying issue is how much non-fiction contributions, with their abstract conceptualization component, are felt to be approachable through moments of pause or re-listening, note-taking, consultation of other contents in parallel, browsing the text by jumping from one part to another according to individual interests. Beyond the aspects of technological feasibility, which are outside the scope of the investigation, the answers can be interpreted as indices of the possible desire (or indifference, or dislike) to carry out intensive reading and the new strategies it may encompass (or not), specifying the active or passive attitude already partly previously detected. Questions I, II, VIII and IX are discussed.

Despite the care taken to avoid it, it is not possible to exclude that some biased responses were elicited. However, the free responses denote a high degree of respondents' awareness, also with respect to possible technical solutions applicable to the user interface (including those not expressly mentioned in the questions). Overall, the bias seems to have been limited enough to guarantee the reliability of the survey.

4. Discussion

The collected data provide indirect but clear evidence on the research questions and the hypothesis formulated in par. 1. Two main trends arise: listening is not considered as a limited reading experience, but as a new, alternative use setting; a potential barrier of expository and argumentative texts is confirmed. They are shown to have a current lower accessibility and a potential negative impact on the scenarios of literacy. Following the first trend, a medium-specific analysis can be articulated, hoping to favor a change in perspective by the research community, the publishing entities and the other stakeholders who in various capacities work in this sector, so that this medium is no longer treated as a derivative of others.

Regarding the consumption experience, the second subgroup is particularly informative and reports that the sample, despite their mature age and presumable education within a traditional literacy context, in many cases does not project into listening to audiobooks the attitudes developed on paper, considering them an alternative use setting (59.4%). This data show what may happen when the “gold standard” is removed (even if only partially) from the end users' side. It is interesting, however, that a percentage of about 15% (15.6% in the first question and 14.1% in the second question of section 3) considers the audiobook a superficial and secondary experience compared to the reference model. The intermediate answers about the permanence of attitudes adopted in traditional reading (“yes, only in part”, 23.4%) suggest a possible hybridization of the consumption experience and the mental processing that underlies it, which is also supported by the analysis of responses about visualization of concepts and their relationships.

If audiobooks are not experienced as a subtraction, the judgment is also conditioned by the quality of the audible and by the text type. Regarding the hypothesis outlined in par. 1.4, all subgroups report a potential barrier coming from expository and argumentative texts. Section 2 documents a preference for narrative but also a propensity to listen audiobooks to stay updated and learn, despite this sector being less covered by the offer of titles. In Section 3, the intensity of the consumption experience is associated with the type of text by a percentage of 21.9%. At the end of Section 4, most respondents (52.6%) seem to recognize a difficulty of non-fiction audiobooks when they declare that they would not recommend their use for studying (16.3%) or only if good quality is available (36.3%).

However, strategies to overcome that possible barrier are also identified, suggesting that the cognitive engagement does not diminish. The solutions proposed in the multiple-choice options, which obtained double-digit percentages of preferences and are reiterated also in some free text responses, show that the sample would adopt strategies comparable to those that, in a printed or video text, are made by rereading and note-taking. These data correct what is reported in the literature, denying the hypothesis of a lower propensity to re-listen (see par. 1.2), and provide a more complex picture of the volition of preserving attention and concentration, active processing, and critical thinking. Significantly, respondents are open to using parallel contents to support the study (with percentages over 30%): this too can be considered a strategy to delve deeper into some passages, with a view to ordering and

selecting the information.

Complementarily, as stated in the interpretative keys, from a general linguistic perspective it must be kept in mind that other semiotics, such as graphs, images and tables, usually represent an important aid in meaning-making of written texts, especially non-fiction. All the subgroups testify, in different answers of Section 4, mentally organizing information based on spatial associations. For example, in the answers declaring to arrange the most important information in a virtual space (34.1%, 9.9% among the persons who developed the visual impairment since birth or childhood) and in those calling for an audio description of graphs (57%). Other free text answers refer to the possibility of conceptual maps. Considering the diverse semiotic resources at play for all the involved subgroups, a multimodal perspective is the most appropriate for examining the issue: even people who suffer from the disability since birth can cultivate habits of visualizing conceptual relations, with representations in Braille language or through other dedicated supports. To exclude the occurrence of processes of visualization, which are proved to be fundamental also in the comprehension of abstract concepts (Villani, 2018), could be simplistic.

Overall, the investigation establishes the development of a medium-specific consumption model. Participants seem to have the volition to carry out actions comparable to intensive reading, but at the same time to get frustrated by the lack of proper technical features. Such circumstances might indicate that, at this stage of their spread and with the current technological infrastructures, audiobooks are eliciting needs that remain unheard. Features to improve interactivity, browsing of the text and customization of use could help in advancing the textual accessibility.

Turning the discussion to the aspects of overall language educational policies, many of the collected data show that the consumption attitudes reported in literature may not be inherent in the medium, but in the way in which this medium is typically offered in high-income countries. Today, audiobooks are mostly available for “Reading as a leisure activity” (as it is defined in the Common European Framework of Reference for Languages: Council of Europe, 2020), and they could also be interpreted by the public as an experience compatible with the rhythms of enjoying cultural products in contemporary societies. The inclusivity role that audiobooks play in the market, already analyzed in different studies and here highlighted with attention to persons with SLD or disabilities, should not be ignored or underestimated. However, the activities that the same European document defines “Reading for information & argument” and “Reading for orientation” (Council of Europe, 2020) are equally important in knowledge societies. For them, the present investigation reports a risk of weakening associated to audiobooks. Consequently, they would not act as an accessibility tool, because of two converging reasons: on the one hand, the increased difficulty to mediate from written to spoken language associated to the textual characteristics of non-fiction contents; on the other hand, the lower availability of audible versions with sufficient quality and proper technical features. Policy makers and major stakeholders should strategically prioritize the preservation of “Reading for information & argument” and “Reading for orientation,” along with their foundational cognitive and pragmatic skills. It requires investments and positive actions, for which some important steps have been taken; further to the Italian “Centro

Nazionale del Libro parlato” (CNLP), there are many national excellences, which offer a wide range of titles and are continuously fed with scientific magazines of international level. Given the positive feedback coming from the public, it seems crucial to move away from the sole market logic and improve a public cultural offer of these contents, also through the library network, with proper production capacities.

5. Conclusion

In conclusion, the main findings can be outlined as in the following:

- (a) Textual accessibility and consumption experiences are key considerations that shape the necessary medium-specific analysis of audiobooks;
- (b) Text type plays a fundamental role in determining the accessibility of audiobooks, with special reference to non-fiction;
- (c) especially in non-fiction, the limited control over pacing, re-listening and note-taking can be very impactful;
- (d) especially in non-fiction, there may be a propensity to re-listen, note-taking, using in parallel other contents for deeper understanding;
- (e) following the previous items a), b), c) and d), the strategies associated to intensive reading are not a priori inhibited or discouraged by the medium; their feasibility depends on the features available in the technological infrastructures;
- (f) visualization, as a mean to comprehend and memorize also abstract concepts and complex conceptual relationships, is described as an activable mental process by all the involved subgroups, including persons who developed a visual impairment since birth or childhood;
- (g) the potential of multitasking is seen as an advantage of audiobooks; the consumption experience is mostly conceived not as subtraction, but as a new, alternative use setting;
- (h) discussion of different data suggests the hypothesis of a hybridization of the mental habits and postures triggered by audiobooks;
- (i) A twofold engagement, both cognitive and emotional, is testified by respondents;
- (j) On the side of the audible production, some precautions could be taken to mediate the visual cues present in the original book;
- (k) For people who have audiobooks as the privileged source of (life-long) learning, the activities of “Reading for information & argument” and “Reading for orientation” could be weakened in the current context of use; policy makers and major stakeholders should strategically prioritize their preservation.

The results can be generalized to the entire audience of audiobooks, to the extent that they are used exclusively. That is, to the extent that a book or cultural product is enjoyed by a person

only in its audible version. Under this condition, the proposal of a novel consumption experience can be valid for everyone, from those who suffer from a visual disability since birth to those who are typically developing. The hypothesis of hybridization made in point h) must be verified and detailed for different groups. At this stage, it is plausible to propose that the consumption experience of listening to audiobooks elicits mental processes that intersect with those involved in the visualization and spatial structuring of information within the “alphabetical brainframe”. This intersection draws only in part from a direct traditional interaction with printed texts.

The cognitive and emotional engagement shown by the participants (i) may be influenced by the disability condition, increasing their motivation to fully enjoy the texts. However, the finding is relevant because it demystifies the attribution of a lower cognitive engagement as inherent in the medium. It is consistent with the other findings d) and e). Alternatively, if the reduced engagement observed in other surveys is linked to the context (where the individual dedication can make the difference), a more complex interpretation framework is needed to understand it. Some aspects intertwined with mental processing, such as those in finding f), can be addressed in a more systematic way by psycholinguistics and neuroimaging studies.

In the field of Multimodal Semiotics, the investigation raises the possibility of broadening and deepening. The case studies detailed in par. 1.4 are the sole contribution here provided to questions VI and VII regarding the possible compensation of the lack of visual cues in audiobooks and the transformation of authoring processes. The analysis has been limited to expository and argumentative texts, contextualizing the other research questions. Expanding the corpus used for the case studies could drive the development of recommendations, repositories of best practices and guidelines for professional voice providers; more in general, a wide comparison between printed (or e-book) and audio versions could improve the available evidence. In native audio contents, possible phenomena of grammaticalization from written to spoken verbal language could be determined.

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