Music as an audiovisual experience for children: what it tells them, what they understand and how they feel [1]

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Abstract. This study examines the understanding of audiovisual music in childhood, addressing quite an unexplored space, which is important due to its cultural immersion and impact: experiencing daily music in large multimodal spaces. The objective is to examine how the music of audiovisual sequences that are popular among children aged 11 to 14 produces meaning and significance when perceived. These perceptions are explored after listening to and/or viewing 14 sequences edited in different versions, using a mixed methodology. The results show four content analyses comparing the responses to isolated exposures to the sound and image of the various audiovisual sequences, exploring emotional, cognitive and narrative factors. The highly inductive study carried out produced four significant conclusions: 1) The construction of sonic thought is caused by the expression of emotional, cognitive and narrative aspects – especially the first two; 2) Music has a decisive importance in the entire process; 3) The emerging methodology used has made it possible to show children's perceptions about the audiovisual experience; 4) The results obtained are consistent with Vigotsky's principles, analysed in the bibliographic review.
Keywords: children's audiovisual music; narrative; listening; content analysis; meaning and significance.

[en] La música como experiencia audiovisual en la infancia: entre el contar, entender y sentir

Resumen. Este trabajo se interesa por la comprensión de la música audiovisual en la infancia, abordando un espacio inexplorado e importante por su inmersión cultural e impacto, el de la experiencia de la música cotidiana en los grandes espacios multimodales. El objetivo es examinar cómo la música de audiovisuales favoritos de niños de once a catorce años produce significado y sentido a partir de sus percepciones. Se explora a partir de la escucha y/o visionado de 14 secuencias editadas en versiones, utiliza una metodología mixta que combina el análisis musical, cuantitativo y cualitativo mediante el análisis de contenido. Los resultados muestran a través de cuatro análisis las respuestas a exposiciones separadas al sonido y la imagen por Versiones, realizando un estudio detallado de la escucha y, finalmente, por Audiovisuales que exploran los factores emocionales, cognitivos y narrativos. Del estudio realizado, marcadamente inductivo, se obtienen cuatro conclusiones significativas: 1) La construcción del pensamiento sonoro se produce por la articulación de lo emocional, lo cognitivo y lo narrativo con una presencia destacada de los dos primeros, 2) La música tiene una importancia decisiva en todo ello, 3) La metodología utilizada ha permitido mostrar las percepciones infantiles sobre la experiencia audiovisual y 4) Los resultados obtenidos son coherentes con los principios de Vigotsky estudiados en la revisión bibliográfica.
Palabras clave: música audiovisual infantil; narrativa; escucha; análisis de contenido; significado y sentido.

Summary. 1. Introduction, 1.1. Thought and language, 1.2. Emotions and narrative art. Rereading Vigotsky, 1.3. Meaning and significance, 1.4. Music in the audiovisual discourse during childhood. 2. Methodology. 3. Results. 4. Conclusions and discussion. References.

1. Introduction

This study attempts to understand the music that surrounds us, especially audiovisual pieces, as a space of experience and knowledge. The goal is to examine how the soundtrack of some of the favourite audiovisual productions of

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children aged 11 to 14 produce meaning and significance when perceived. More specifically, we study the act of listening and its connection to understanding, emotions and the story as perceived in videos edited *ad hoc*, using a questionnaire with open questions. Music cognition has been studied by different authors such as Meyer (2008), Révèsz (1954) or Sloboda (2015), who provided numerous empirical and reflexive results. However, its integration, theoretical structure and the study of its effects are insufficient (Gómez-Ariza, 2000a). The studies analysed show a transition from psychoacoustic viewpoints to other more cognitive ones, with greater interest in aspects such as learning, memory or depiction (Krumhansl & Kessler, 1982; Gómez-Ariza, 2000b; Porta, 2007). Hence, we found an unexplored space which we wish to address in this study. We want to study children's perception of day-to-day music in mass media. Audiovisual listening is combined with narrative and visual elements simultaneously. This lack of "rigid semantic components" is what gives music a significant part of its flexibility and richness, which can, in cases such as the one studied, surpass that of the spoken language (Gómez-Ariza, 2000b). The approach performed and detailed in the following pages focuses on thought and language, narrative art, actions and emotions. All analysed from the music and sound.

1.1. Thought and language

Three authors stand out in classic literature regarding the study of thought and language in the field of education: Piaget, Bruner and Vigotsky. From a semi-discursive and social-cognitive framework, Jean Piaget focuses on language, specifically regarding its symbolic function and the constructivist vision that governs its approach to knowledge (Cárdenas, 2011). César Coll (2012) defines the Swiss author as one of the most important thinkers of the 20th century after studying his works and relevance. The works of Piaget contain, among others, particular aspects of the capability of children aged 9 to 11 to understand speech, as studied in Piaget et al. (1930), which remains fully valid. The second is Bruner, an author who decisively contributed to renewing the studies and research in the field of psychology by adding evolutionary processes and social determinants to theories. These theories made it possible to understand how to channel education (Bruner and Acción, 1984). The third author of note is Vigotsky. From a general viewpoint, his work is classic. For the subject matter of this article, we highlight his work entitled *Thought and language* (Vigotsky et al., 1995), which describes how language in social relationships becomes a tool for the inner psychic organization of children. Its social-historical and genetic-evolutionary analysis is one of the great benchmarks on the subject at hand. It has a key analysis of thought and emotions, which have signs as mediators (Vigotsky, 1979). The author places emotions as one of the hardest research topics to approach. He says this approach must be conducted through empirical studies of experience, their indications and links to thought and internal language. All this must be combined with a theoretical and critical analysis to produce a general theory. In his work, the Russian author highlights that one of the issues linked to his theoretical revision is the connection that emotions have with adjacent fields of knowledge, such as Psycholinguistics, Linguistics and Educational Psychology. Different authors and schools of thought have addressed the importance of music as a highly relevant and significant factor, as it goes with scenes, crates a dramatic emphasis or channels emotions (Casetti and Di Chio, 1991, 2019; Kurosawa, 2005; Porta, 2007). We have analysed this topic by analysing children's audiovisual music.

1.2. Emotions and narrative art. Rereading Vigotsky

1.2.1. Emotions

In Educational Psychology, Vigotsky (1926) refers to emotions as primitive feelings that cannot remain indifferent or unproductive towards behaviour. The author defines emotions as the internal organisers of our behaviour, which tense, excite and stimulate it, causing three reactions: A) Reflexive, motor, somatic and secretory reactions; B) Bodily reactions expressed as new stimuli; C) A secondary perception of the proprioceptive field that produces the body's assessment of its connection to the environment, dividing them into positive and negative feelings (Vigotsky, 1926). Emotions are involved in the meanings we create from life experiences (Albornoz, 2009). The concept of emotion has gradually gained importance and is now one of the prominent aspects of educational research. It has a wide variety of definitions. The most comprehensive one comes from the study by Kleinginna& Kleinginna (1981), based on dictionaries of Psychology. This allowed them to obtain categories such as affective, cognitive, physiological, emotional/expressive, disruptive, adaptive, multifaceted, restrictive or motivational emotion, or emotion based on exterior stimulation. Psychology commonly defines emotion as a feeling or perception of real or imaginary elements and relationships that is expressed physically and includes behavioural reactions. Ekman et al (1983) suggest six basic emotions: surprise, disgust, sadness, anger, fear and joy/happiness (Prinz, 2004).

1.2.2. Narrative art

Artistic narration is composed of form and content. Igartúa et al. (1994) talk about form in terms of distribution, planning and structure. Vigotsky (1972) uses the concepts of form (plot or story), material (content or fable) when

analysing the structure of artistic narrative. Regarding the story, we would like to highlight three elements in children's audiovisual pieces due to their effects on developing thoughts: conflict, catharsis and the hero.

Conflict and imbalance. Vigotsky believes that imbalance, conflict and signs are essential in dramatic narration as mediators of higher psychological processes (Vigotsky, 1979). This approach is aligned with Semiotics, with all the elements of the story, text, image and staging coming into play (Porta, 2014a). To all of these, we can add the contradiction of form and content to cause a certain aesthetic reaction (Igartúa et al., 1994). This way, expectations and scenarios create frameworks that are held up by contradictions that draw the attention of the viewer from subjective, and often private, elements. Among other authors, Mandler (1987) agrees with this statement when addressing the artistic stimulus.

Catharsis. From a Vygotskian viewpoint, viewers' emotions at the cinema cause a dramatic catharsis, understood as the use, modification and alternation of opposite feelings. Therefore, it is seen as an interplay of complex and ambiguous emotions that shape the story and all its elements. This balance causes a catharsis when negative emotions are offset or neutralised by positive emotions in the filmic game.

The hero. The perception of the story, the plot and the hero's personality also cause mixed emotions. They are a core process in drama, which requires specific traits (Vigotsky, 2003).

Lastly, in education we highlight Hernández (2008), who studies the genesis, trends and consequences on research of so-called 'Arts-based research' in an attempt to connect what is said with how it is said, while suggesting narrative forms from this research approach. There is also the study of Mateos et al. (2011) on the schooling experience through stories, or the work of Goldstein (2009) on "doing" from the psychology of creativity and art.

1.3. Meaning and significance

Semiotics

Talking about meaning entails talking about Semiotics, defined as the science that deals with the systems of communication of human societies. In Semiotics, a sign is an item or event that takes the place of an absent one by virtue of a certain code. Ferdinand Saussure was the first author who talked about Semiotics as the study of signs at the core of social life (Saussure, 1989) in the early 1900s. That was when the Swiss author established the foundations for studies on modern communication. He gave rise to numerous scenarios and systems of meaning that encompass anything from fashion to shows, customs and cultural manifestations, as well as verbal and non-verbal language, and their expression in multimodal speeches, which helps strengthen their communicative potential. Another key author is Peirce (1991), who considers sign, item and interpretation as three essential components that feed one another, creating a spiral process. So is Roland Barthes, who stands out in this field for his studies on popular culture. In them, he analyses significant connections through narratives that express shared cultural values (Barthes, 1987). As well as Semiotics, Barthes influenced Structuralism, Social Theory, Anthropology and Post-structuralism (Barthes & Akçakaya, 2009). In his work, he expands the universe of linguistic signs from a critical viewpoint. He established dichotomies by analysing social conventions and myths, revealing that items establish significant connections through narratives that express joint cultural values. The last author chosen is Umberto Eco, who talks about meaning as a cultural unit in *The Absent Structure* (Eco & Cantarell, 1972).

From a change in behaviour to a change in meaning. A commitment to education

Authors other than Piaget, Vigotsky and Bruner have shown an interest in meaning in education. This is the case of Ausubel. The major breakthrough of this author was to go from considering learning to be synonymous with a change in behaviour, to saying that human learning leads to a change in the meaning of experience that entails thinking and affection. This empowers the individual to enrich the meaning of his or her experience (Ausubel, 1983; Ausubel, Novak and Hanesian, 1976). In Spain there are some essentials, such as the works of Cesar Coll and his studies on the importance and repercussions of meaning and significance on innovation and quality in university teaching, as well as the teaching position as an axis of the constructivist notion of teaching and learning (Coll & Solé, 1989; Coll, 1988; Mauri et al., 2007; Solé & Coll, 1993).

1.4. The perception of music in the audiovisual discourse in children aged 11 to 14

Different studies address the ambiguity of music when identifying meanings in order to classify it (Meyer, 1956; Maher et al., 2006; Sloboda, 2015). As a non-linguistic semiotic system, audiovisual music is structured and configured to generate expressive meanings by staging a chain of communication. Its meaning can be approached from two viewpoints: from the person who speaks and the person who listens (Porta, 2007). The viewpoint of the person who speaks, linked to *poiesis* (Nattiez, 1990), has been studied by Musical Language, the Theory of Music and Musicology. The viewpoint of the person who listens, like the disciples of Pythagoras, who observe and study

from behind the curtain, is studied by ethnomusicology, sociology and cultural studies, among others that focus on social speech (Salgar, 2012). In the field at hand, from a communication standpoint, music, and especially audiovisual music, is considered speech, a set of signs (González-Requena, 1992). At the same time, education takes part in all of them due to its scope.

Several authors such as Chion (2019), Adorno & Eisler (1981), Pereira (2011), Beltrán (1991) or Porta (2007) have looked into it. Some, such as Porta, have come up with different methodological approaches and performed case studies in the budding field of research in education. The viewpoint of audiovisual listening still has a hidden side, which this article specifically targets: learning the meaning and presence of music in audiovisual speech for children. Learning it entails recognising its social value (Hernández et al., 2008) and reinterpreting it constantly due to its dialogic nature (Peirce, 1991). This means that thought, knowledge and experience are dynamic and incomplete processes.

Meaning is a significant aspect, a process of Semiotics channelled through signs (Porta, 2014b, 2019). In this dialogic process, Cruces (2002) poses the following question: How does music contribute to creating worlds of meaning? There are some key contributions, such as those by Pierre Schaeffer in his *Treatise on Musical Objects* (1996) or Michel Chion with *Audiovision* (2019). In their works, these authors address the narrative possibilities of music and its connection to image. Thus, in a prominent way in our subject matter, Chion says that the evocative quality of sound is the causative trait, as it allows us to "narrate" with sound in the absence of an image and thus perceive what is off-screen. In his treaty, Schaeffer says that sound has a double function: it acts as a register (evokes memories) and expresses its acoustic qualities (Schaeffer, 1996). From the viewpoint at hand, the importance of the social and communicative study of music in the media focuses on its ability to summarise the context and shed light on the world around us**.** And all this in education, due to its permeable and dynamic nature as a driver of social and individual thought construction through its tools for comprehending the world: Perception, the Forms of Representation, Meaning and Significance (Hargreaves, 1996; Eisner, 1995, 1998). The bibliographic review of these learning factors and their connections to narration and music reveals different works, such as the study conducted by Rincón (2006) on narratives in media outlets as a way of describing entertainment. Another example is the study by Cyrulnik (2013) on resilience and its connection to childhood, and Pelinski (2005) on music as an experience, which reminds us of Dewey (1949). Then there is the study by Anderson et al. (2012) on violence in audiovisual speech, Goldstein (2009) on the psychology of acting, or Schellenberg & Mankarious (2012) on understanding the emotions of children. However, articles on the influence of music on education are more scarce. There is *Audiovisual listening* by Serrano (2009) on the audiovisual explosion on the Internet, and Gustems & Calderón (2014) on the multimodal aspects of audiovisual listening. Regarding its *Comprehension* there are different works by Porta (2018) as well as a more specific Porta-Navarro, and Herrera (2017). In connection to emotions there is the study by Valdez (2017), which looks at how art is linked to audiovisual production and its management. Regarding educational practice, there is the study by González (2009) on education and family, and one by Navarro (2007) on experienced education and the presence of drama. Lastly, *On narration*, by Del Barrio et al. (2003), establishes connections between music, narration and audiovisual media.

2. Methodology

Authors have conducted an increasing number of studies that analyse content in social disciplines. based on certain data, their purpose is to articulate replicable and valid inferences that can be applied to their context (Krippendorff, 1990). Thus, according to this author, the context emerges as the reference framework where messages and meaning take place. He adds that today's best content analyses use the triangulation technique, combining multivariate statistical methods with more subtle qualitative techniques such as semantic networks. Therefore, the content analysis must be performed in close connection with the context and justify its presence within it. The Theory with which it has been most decisively identified has been are Grounded Theory (Strauss & Corbin, 1997) and Glaser and Strauss' constant comparative method. Our research study is of a descriptive and interpretative nature, conducted using a mixed methodology in which the qualitative analysis of data holds a prominent position (Cook & Reichardt, 1986; Cohen & Manion, 2011; Pérez, 1994). We used content analyses to perform it. Thus, it includes communicational analysis, which is systematic and
objective.

2.1. Research design, materials and procedure

This study is part of a project, funded by, whose goal is to learn about audiovisual listening during childhood. This paper addresses one of its objectives: learning the perception that children aged 11 to 14 have of the significance of listening to a selection of popular audiovisual sequences. The choice of method allowed us to approach what children perceived when listening, learn updated information on this topic and use the tools required to perform it. Thus, the research was designed in four phases, with four tools and four content analyses (Table 1):

Table 1. Research design, materials and procedure

PHASE	PURPOSE	TOOLS	EVIDENCE
PHASE 1	Bibliographic review	Bibliographic selections: WOS, SCOPUS and Google Scholar databases. Bibliographic managers: Mendeley, Ednote	
PHASE 2	Selecting concepts and key words	Analysis: MCQDA	Content analysis and word cloud
PHASE 3	Selecting audiovisual sequences, their associated observational questionnaires, and setting the answers to open questions	Pinacle as the image editor, SPSS and Excel for quantitative measurements	Creating the questionnaire, applying it, gaining results and analysing them
PHASE 4	Performing the four content analyses	MxQda and word clouds for the qualitative analysis	CA 1. Sound VS Image CA 2. Listening analysis CA 3. Analysis by audiovisual sequences CA 4. Emotional, cognitive and narrative factors

2.2. Audiovisual sequences, participants and the experience

The audiovisual sequences chosen

We performed an initial exploration of their preferences (Porta, 2018). We chose 14 audiovisual sequences from films, cartoons, series and documentaries, choosing complete scenes that have a prominent presence of music. A total 20 groups of 3 series were created, each comprised by different audiovisual sequences belonging to the mentioned genres, and they were then edited with Pinacle and coded (Porta-Navarro, A., & Herrera, 2017).

Audiovisual series were created using full sequences of the following audiovisual productions (Table 2):

Table 2: The audiovisual productions chosen and their sequences (adapted from Porta, 2018)

Type of audiovisual sequence	Title and duration of the sequences
Films	«The Croods» (1'52"), «The Lion King» (1'51"), «Oz: the great and powerful» (2'10"), «Titanic» (1'31"), «Toy Story III») (1'57")
Cartoons	«The Simpsons» (2'35"), «SpongeBob SquarePants» (1'46"), «Doraemon» (1'54"), «Dragon Ball Z» (1'54")
Series	«Violetta» (2'28"), «La que se avecina» (1'24"), «Good Luck Charlie» (0'50"), «iCarly» (1'02")
Documentary	«The lions of Buzanga» (1'57")

Associated questionnaire and open questions

In connection to this phase, we created a questionnaire and had it validated by a panel of judges, and then analysed quantitative data obtained from the closed questions of the questionnaire. Said study gave an account of the quantitative study of the different meanings of the soundtrack and the predominance of sound throughout (Porta-Navarro, et al. 2017). This article revises, by way of content analysis and a mixed methodology, the study of answers to open questions.

Participants

A total 547 children aged 11 to 14 were chosen from Spanish (68.6%) and Argentinian (31.4%) educational centres. In Spain: Castellón (31.8%), Valencia (24.1%) and Granada (12.6%). In Argentina: Chaco (24.1%) and Corrientes (7.3%). By gender: boys (44.2%) and girls (55.8%). They attended 22 educational centres. Of these, 72.8% were public, 11.9% were private schools that receive government subsidies and 15.4% were private schools. Students were in Primary Education (67.1%) or Secondary Education (32.9%).

2.3. Tools used

To conduct the study, we used programs SPSS and Excel for the quantitative measurements, the mentioned questionnaire, Pinacle as an audiovisual editor to prepare the sequences and answers, and programs MxQda and Atlas.ti for the qualitative analysis.

The following were considered to design the content analysis (López Noguero, 2002):

– Analysis categories: sentences and paragraphs
– Analysis unit: groups of words
– Registration unit: words, sentences and/or paragraphs
– Context unit: open answers to the questionnaire provided by a sample of 547 children aged 11 to 14
– Listing unit: the existence or lack of a topic related to the chosen categories and codes

From all these categories and units we considered the codes and clouds, comparing maps of documents and codes, co-occurrence and dispersion studies.

3. Results

We studied the open answers to the questionnaire corresponding to the *Sound only* and *Image only* versions with program MxQda to learn the meaning and significance of sound in the audiovisual sequences chosen.

3.4. General perceptions

For this exploration, we analysed the answers to open questions by frequency of words, sorting them from higher to lower in the *Sound only*, then *Image only* and, finally, *Full* versions.

To study them, we extracted infinitive verbs and nouns from all open answers, taking the 5% most used.

The most used verbs were:

Sound only: to sing, to want, to eat, to play, to listen, to imagine, to run, to frighten, to endanger, to hunt.

Image only: to hunt, to eat, to want, to sing, to frighten, to imagine, to run, to try, to feel.

A first analysis of the results revealed connections and similarities in the perception of the different versions. Participants stated aspects linked to narration, emotions and sound that were in all versions. Regarding the *sound*, participants showed interest not only in music, but also in the spoken language, noises and sounds. In their observations they referenced several aspects. This article lists the most noteworthy. Regarding the *narration*, they wrote about the characters, the story and the narrator, as well as the protagonists and antagonists; in *locations* their answers included: "It was dark, with lots of clouds and dangerous" as well as descriptions of locations that addressed features such as colours, sizes, safety, danger, awe or emptiness. Participants often considered *emotional* factors, making references to fear, happiness, sadness, joy or nervousness, as well as actions such as to frighten or to feel. Examples of their comments include: "I would be very frightened and thinking of how to escape from the situation", "Very frightened because I am being chased". They also placed themselves outside the story, with comments such as: "If I was the gazelle, I would be very frightened". It is worth noting that the verb *to imagine* appeared in the *Image only* and *Sound only* versions (150), but not in the *Full* version, although comments did include: "I imagine a dark place but during the day", or "It looked like a tornado and it seemed kind of dangerous".

General answers after listening correspond to versions with a soundtrack; in other words, the *Full* and *Sound only* versions. A first approach was performed, revealing three ways of listening: to the oral narration, another to noises and sounds, and one to music. Participants revealed as much in their comments. In this initial section there are some that reference location by sound, the presence of the narrator or the meaning of what was heard. Regarding *narration* they wrote comments such as: "Somewhere in the jungle, because you can hear jungle noises". Regarding the voice-over: "You can hear the narrator who says what they are doing". They also reference *noises and sounds*, including the ones they fail to recognise: "Yes, I heard them, but couldn't identify them". Regarding the music, they specifically talk about instruments, the most common being: guitar, drum, violin, piano, flute, ukulele, different percussion instruments and clarinet. Regarding actions, *to sing* appears prominently (226 times) with comments such as: "The characters sing". Some state the desire to take part in the scene, writing sentences such as "I would sing with them", and also address the intent of the music: "It creates an effect on the person who listens". This general study also provided surprising data on perceptions such as cold, darkness, night or clear surroundings. They also show their ability to separate from the story, to see and hear it in a critical way. We also found the perception of the context striking and unforeseeable, as they described movements, the time of day or temperature. Similarly, their assessment of the experience was a positive surprise for us, as they classified it as very interesting and fun.

With this initial exploration, we confirmed the potential interest of the study for analysing open answers to questions about the different versions, and specifically on their soundtrack. Through this *Sound only* and *Image*

only version-based study, using an experience created *ad hoc*, we approached auditory perception considered as selective attention (Luria, 1981; Pinillos, 1975), and the meaning, understood as the position of the individual in the speech (Greimas et al. 1990; Porta, 2014a; Talens, 1995). This study gives an account of the information obtained and the emotions they felt by just listening, or watching without sound, after separating the basic components of the audiovisual sequence: image and sound. It is understood as a gradual process that leads us to ultimately learn the importance, significance and meaning of listening in audiovisual environments when listeners are highly motivated by the content.

3.5. What they see and hear

Participants that only listened had very different interpretations than those who saw without listening. To study this, we analysed the actions, emotions and topics in the answers. We looked at the frequency of the words, choosing the 5% with the highest total frequency and contrasting *Sound only* and *Image only* versions. These are the results obtained (Figure 1).
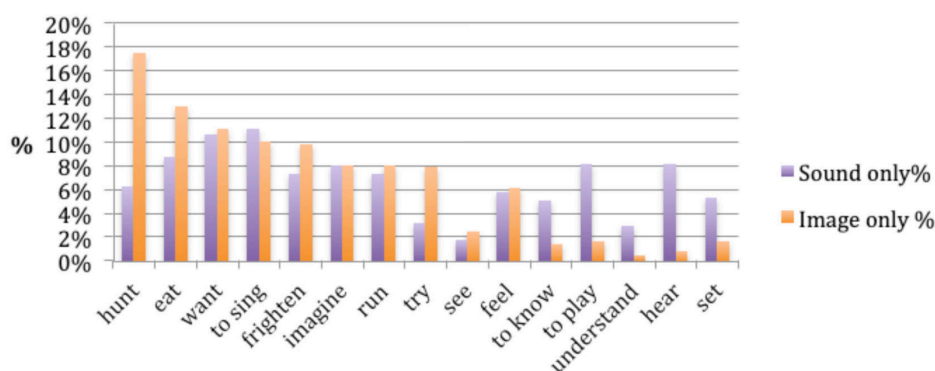

Figure 1. Actions: *Sound only* VS *Image only* (own production)

The *Sound only* and *Image only versions* prominently show the following actions:
Sound only: To sing, to want, to eat, to play, to listen, to imagine, to run, to frighten, to hunt, to feel and to know.
Image only: To hunt, to eat, to want, to sing, to frighten, to imagine, to run, to try and to feel.
The following appear with greater frequency in both versions: To eat, to want and to sing. And at a higher rate than in the image, in *Sound only*: To sing, to listen, to play, to create an atmosphere and to know. Lastly, with the same score as with the image: to imagine.
In feelings or emotions, the most predominant answers were: Fear, happy, sad, nervous, dangerous and wild. More common in *Sound only* than in *Image only* were: Fear, happy, dangerous, nervous and sad. These are the results (Figure 2).
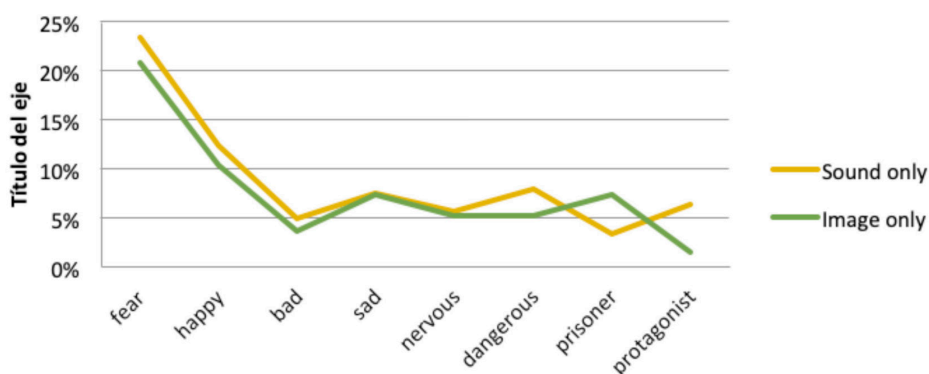

Figure 2. Emotional aspects. *Sound only* VS *Image only* (own production)

Topics

The nouns listed were highly dependent upon the plots of each audiovisual sequence. Thus, they were grouped according to their topics (Figure 3):
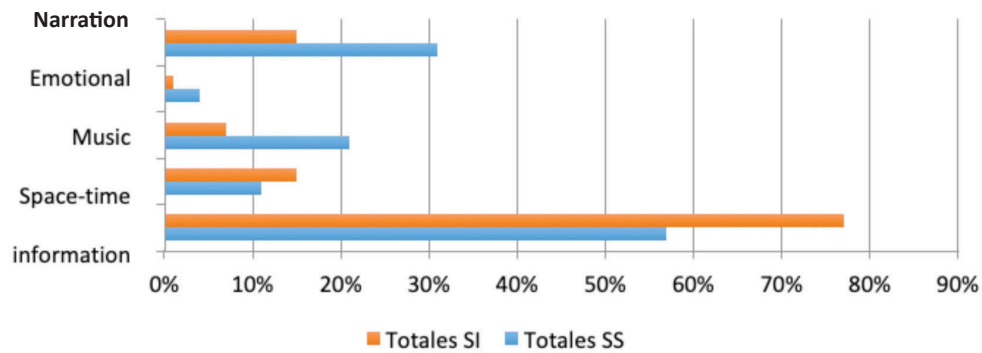*Information, space-time, music, emotions and narrationve (Fig. 3).*

Figure 3. Topics: *Sound only* VS *Image only* (own production)

We observe how participants perceive a key part of the audiovisual sequence through sound, with the following aspects being highlighted over the image: The narration (what the story tells) (31%), followed by music (21%), emotional factors (4%) and lastly, at a short distance from the image, the perception of space and time through sound. The following sections analyse the results obtained in the *Sound only* version separately.

3.6. Beyond sound. What happens in the story? How do you imagine the location?

Beyond sound

The participants that only listened went beyond sound in their perceptions. Among other aspects, they talked about feelings, spaces or luminosity. To study this, we classified the answers into narration, assessment of the experience, voice, sounds, noises and music, with comments such as the following:

1. *Narrative.* "I listened and imagined a princess who met different types of people that she lived adventures with" [what did you listen to? The Simpsons. (1 to 22)], or "There are two characters fighting and then you hear a cry" [what did you listen to "Titanic" P4S (1-11)].
2. *Assessing the experience of sound.* They expressed it with sentences such as "I greatly enjoyed being able to hear it clearly", or alluding to the function of sound: "To hear what they were doing". Also: "A war, because you could hear indications that someone wanted to kill them" ["Oz: the great and powerful" P3S-How do you imagine-8]
3. *Voice.* They say they could hear voices of men or boys, and referenced the narration as the voice of the protagonist or narrator, stating: "You can hear the person who says where they are".
4. *Sounds and noises.*
   a) *Descriptive*: "To hear the noises", "You could hear animals", "I heard birds" and placements that indicated space and time: "It was night-time"; Locations: "What I heard takes place in the jungle" or "Somewhere in the jungle, because you can hear jungle noises".
   b) *Perception of movements:* "Hear movements"
   c) *Indication of amounts*: "I heard a pack of wild animals"
5. *References to the weather or temperature*. "I imagine that what I heard happens in a cold jungle" [Buzanga Lions RS How do you imagine-22].
6. *Sonic perception of the habitat.* References to the ability of music and sound to create an environment to immerse themselves in, with sentences like the following: "What I heard was as if I was in a forest".
7. Some talk about *complex representations of sound* perceived as a world (Luria, 1981; Gombrich, 1979; Pinillos, 1975). In their comments, they say: "You can hear a scene in a jungle at night", "I heard an atmosphere with sounds and narrator", "I heard a clear space". They also mention the presence and meaning of music in the scene: "So that those who heard the story felt as ifthey were a greater part of it". However, some expressed difficulty understanding, making comments such as: "I only heard sounds. You can't know much of what they say".
8. *Music.* They talk about instruments: "I heard a sound like a xylophone", "You can hear violins, pianos, flutes", "I heard drums". References to danger and its position in the narrative axis: "You could hear sound or music of danger, so it helped identify the situation". They also talk about the ability of music to point to conflicts or create uncertainty and anticipation: "First you could hear suspense music and then there is a voice that talks about the worst moment in Africa". One of the participants wrote more abstract references. Specifically, they perceived the connection between music played by the characters in the scene and outside it. In other words, differentiating between diegetic and non-diegetic music (Porta, 2007): "It was about singing. When the characters sing, you could hear music that went with the song".

What happens in the story? How do you imagine the location? If you were there, what would you feel?

To answer these questions, we studied the answers to open questions by word frequency: What happens in the story? (515) How do you imagine the location? (359) If you were there, what would you feel? (354). Below are the noteworthy word clouds as a visual map that answer these three questions (Fig. 4).

Figure 4. Word clouds with answers to each of the three questions (own production)

When analysing this section, we considered male or female gender by simple majority. In future research on the data, we will analyse this in greater detail.

The following answers to the questions stand out:

What happens in the story? Appearing (in the scene), the chase, the hunt, singing, danger, listening and speaking.

How do you imagine the location? Dangerous, rainy, hunting, mountainous.

If you were there, what would you feel? This cloud shows the greatest level of dispersion. The following words stand out over the rest: Excited, happy, frightened, nervous and angry.

Sonic perceptions by audiovisual typologies

To study the perceptions of the audiovisual sequences, we analysed the types of audiovisual sequences and categories separately using MxQda (Fig. 5) with the following descriptors:

Four types of audiovisual pieces: Films, Series, Cartoons and Documentaries, with 96 text documents.

Four categories (sets of codes): Music, Emotions, Thought and Communication, with 81 codes and 1,061 coded segments.

The following questions were explored by document variables: What happens in the story you heard? (57.89%); How do you imagine the place where what you heard takes place? (42.11%). Then we explored the categories (codes) and their subcodes using MaxQda Maps, studying the co-occurrence (Figure 5). From the distribution by types of audiovisual material (films, series, cartoons and documentaries), they were separated into two levels: N1 represents the categories (Emotions, Music or Sound, Action and Survival and Thought and Communication), and N2, the co-occurrences of the codes, taking the codes of the music and sound as a reference. The level of significance was obtained by studying their position in the levels and result frequencies, represented in the figure by the number and thickness of the line. Thus, in *films*, the highest scores in the section of sound and music correspond to *To Sing/Songs* (30) and *Great sound* (2). Regarding co-occurrence with the other categories, the most noteworthy were emotions, and specifically *happiness* in everything connected to music; and *to seem, to speak, to run and to hunt* in the other categories.

In *Series*, the clearly dominant one is *to sing*, which is connected via co-occurrence with *happiness* in emotions, being connected to Thought and Communication.

The prominent category in *Cartoons* is *to sing*, in co-occurrence with *happy* in emotions, through which it connects to the other categories.

In *Documentaries*, the word that stands out is *to sound* (in other words, music that is not sung), in co-occurrence with Action and Survival (to hunt, to run and connection to danger), *to speak* and *to listen*.

It is worth noting the strong emotional load that surrounds the audiovisual music analysed and the sounds of their soundtracks, as is the relevance of the observations perceived. Standing out among these is *to sing*, considered actively and almost always diegetically. It is associated with *happiness* and *joy*, terms which are considered similar (Prinz, 2004), in films, series and cartoons. This is not the case in documentaries that do not integrate it. Here, music, and especially the verb *to sound*, is associated with actions such as running and hunting, or danger. Lastly, in films there are significant perceptive associations that take place between their music and sound resources, with emotional aspects (especially positive feelings) connected to one another, strengthening the narrative action.
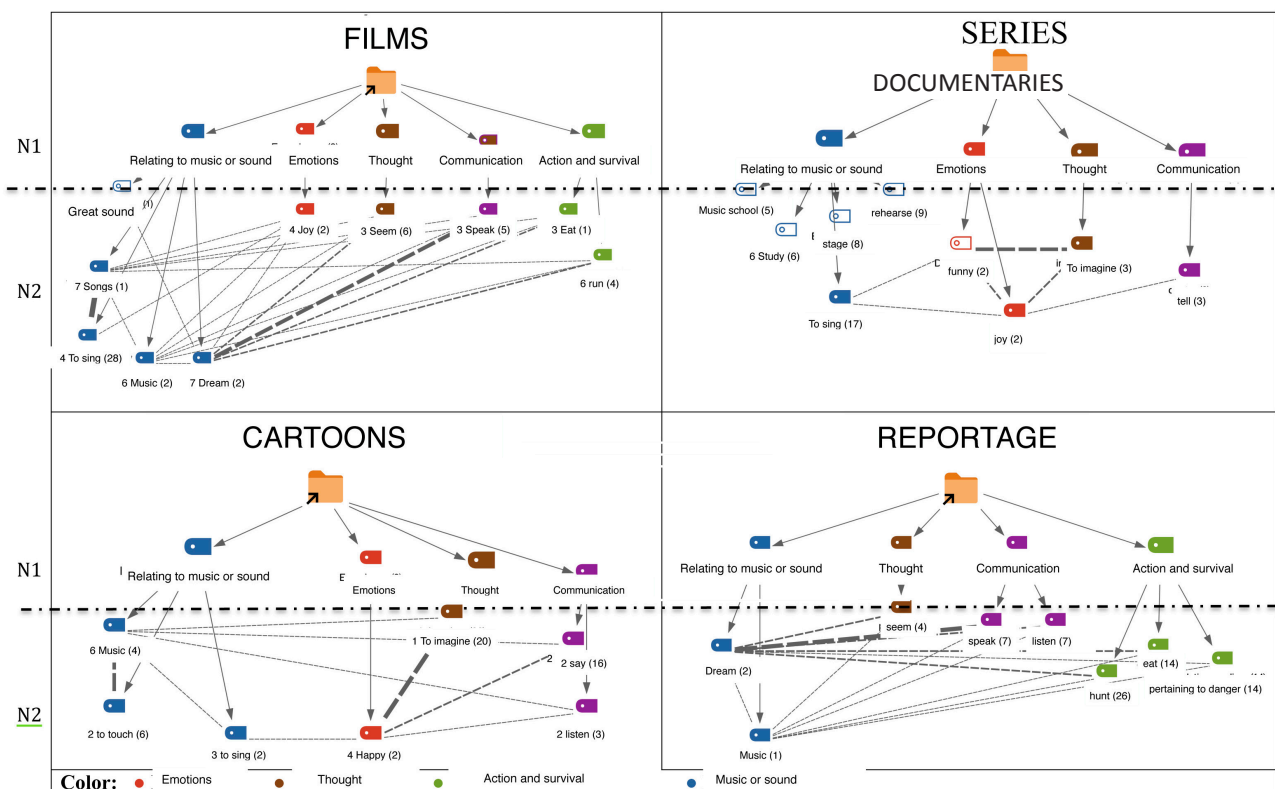

Figure 5. Perceptions when listening to audiovisual sequences (own production)

3.4. The significance of audiovisual listening: what listeners are told, understand and feel from the sound:

Information: What they know
Narration: What they are told: Actions in the fiction. Story and characters, narrator
Emotional aspects: What they feel: Positive feelings, negative feelings and actions derived from feeling
What they understand: Actions derived from thinking, actors and individuals (people, animals and animated objects), settings and places, perceiving space and time
Thought from listening: What they are told, know, understand and feel (Fig. 6)

Understand ⎫
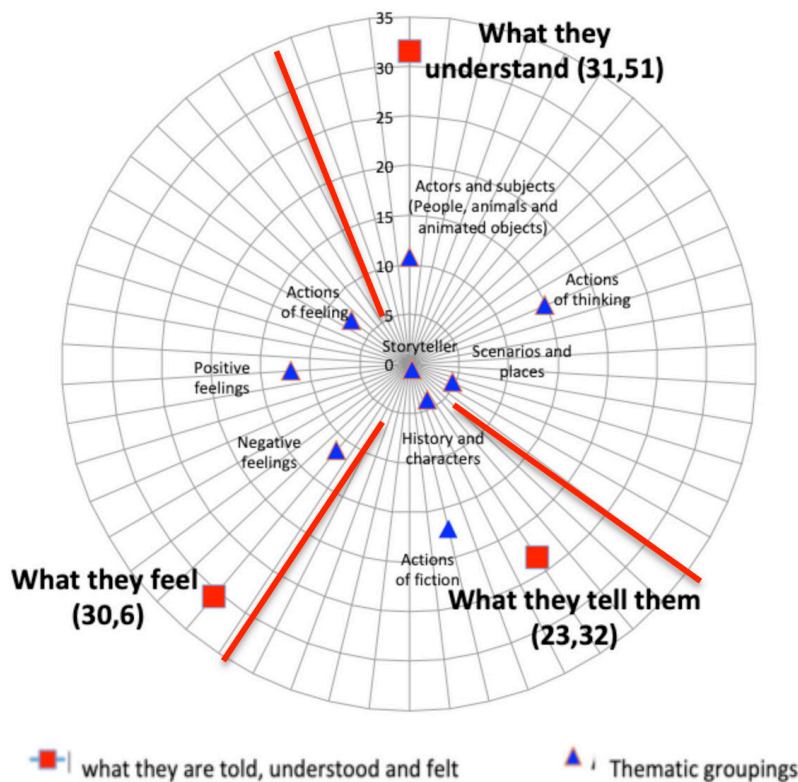Feel   ⎬   Thought from sound
Tell   ⎭

Figure 6. Thought from sound: what they are told, what they understand and what they feel (own production)

Regarding the three axes, an initial approach reveals: Predominance of understand (31.51) and feel (30.6), with less importance given to what they are old (23.32). In relation to the thematic groupings, the results show a greater response in actions related to history, followed by actions related to thinking, and lastly, those connected to feeling. The narration, what they are told, obtains lower results. Regarding the feelings expressed, positive and negative ones appear in balanced numbers.

4. Conclusions and discussion

The purpose of this study was to show children's perceptions after watching and listening to a selection of their favourite audiovisual sequences. On the methodology used, content analysis has shown to be a good tool to study how these perceptions help create thought in general, and specifically from sound. Regarding the contents of the study, the main conclusions of the article, which is considered a starting point, are that the variety of results obtained verifies the inability to provide a unified answer to understanding how people think about sound. The study has verified Vigotsky's et al., theory (1926) and provided an answer drawn from listening and analysing the narration, actions, emotions and the place of music in all of the above. In the first content analysis, we revealed that the perceptions of audiovisual sequences in the *Sound only* and *Image only* versions show very different answers. The different groupings made it possible to study aspects that are not visible, using only statistical procedures or deductive categories. This way, we

located elements that are more easily perceived through sound than image: 1) Actions: to know, to create an atmosphere or to play; 2) Emotions: fear, happiness, nervousness or sadness, and; 3) Topics connected to the narration. The second content analysis, which focused on *Sound only* (music, voice, sounds and noises) shows movements and amounts, references to the weather and temperature, features of the habitat and complex representations of high symbolic and representational value, as well as detailed aspects of music. The third content analysis is a study of the audiovisual sequences, with a prominent spot held by *to sing* in all groups. *To sing* is linked to *happy/happiness*, and to music and emotions, especially in films. This is how we reach the fourth content analysis. Here, we observe listening from a broad position that provides visibility to internal elements as factors that build thought, after analysing the three main resulting categories: Emotional, cognitive and narrative aspects, practically in equal proportions. Emotional aspects include actions connected to feelings. Here, positive and negative feelings are perceived at similar levels, coinciding with Vigotsky's et al. suppositions (1926). Regarding cognitive aspects, we observe actions linked to fiction. This includes references to the protagonist, characters and narrator, actions connected to thinking as regards understanding, imagination, anticipation and deduction, among others, and actions connected to feeling, thus showing their emotions and feelings. From an external position, as observers of the dramatic action, in their perceptions they allude to the setting and the plot, thus placing the audiovisual experience in the "As if…" category (Piaget et al., 1930). Regarding the narration, what they are told has its most noteworthy meanings in the elements of action, followed by those connected to characters and the story, and the perception of the narrator as the voice-over by the person who describes, narrates and creates the guiding thread of the narration, if there is one.

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