

Cristina Cambra, Aurora Leal, Núria Silvestre
Graphical Representations of a Television Series: A Study with Deaf and Hearing
Adolescents *The Spanish Journal of Psychology*, vol. 13, núm. 2, 2010, pp. 765-776,
Universidad Complutense de Madrid
España

Available in: <http://www.redalyc.org/articulo.oa?id=17217376022>



The Spanish Journal of Psychology,
ISSN (Printed Version): 1138-7416
psyjour@sis.ucm.es
Universidad Complutense de Madrid
España

How to cite

Complete issue

More information about this article

Journal's homepage

Graphical Representations of a Television Series: A Study with Deaf and Hearing Adolescents

Cristina Cambra, Aurora Leal, and Núria Silvestre

Universitat Autònoma de Barcelona (Spain)

The understanding of a television story can be very different depending on the age of the viewer, their background knowledge, the content of the programme and the way in which they combine the information gathered from linguistic, audio and visual elements. This study explores the different ways of interpreting an audiovisual document considering that, due to a hearing impaired, visual, audio and linguistic information could be perceived very differently to the way it is by hearing people. The study involved the participation of 20 deaf and 20 hearing adolescents, aged 12 to 19 years who, after watching a fragment of a television series, were asked to draw a picture of what had happened in the story. The results show that the graphical representation of the film is similar for both groups in terms of the number of scenes, but there is greater profusion, in the deaf group, of details about the context and characters, and there are differences in their interpretations of some of the sequences in the story.

Keywords: deafness, adolescents, television, drawing.

La comprensión de una historia de la televisión puede ser muy diversa según la edad del espectador, sus conocimientos previos, el contenido del programa, y la manera como combina los elementos informativos lingüísticos, sonoros y la imagen visual. Este estudio explora las distintas maneras de interpretar un documento audiovisual considerando que, debido a un déficit auditivo, las informaciones visuales, sonoras y lingüísticas pueden ser percibidas de forma distinta a como lo hacemos los oyentes. En el estudio han participado 20 adolescentes sordos y 20 oyentes, de 12 a 19 años, a los que, tras visionar un fragmento de una serie televisiva, se les solicita que hagan un dibujo de lo que sucede en la historia. Los resultados indican que la representación gráfica del film es similar en ambos grupos en cuanto al número de escenas, pero difieren en la mayor profusión, en el grupo de adolescentes sordos, de detalles contextuales y de personajes, así como en la interpretación de alguna de las secuencias de la historia.

Palabras clave: sordera, adolescentes, televisión, dibujo.

Watching stories on the television is not only an entertainment, but also a way of learning, recognising and experiencing new or known situations from the past or present, and also of experiencing certain feelings and emotions. The ability to understand television depends on the age of the viewer and the content of the programme, and on prior knowledge and experiences.

Watching a TV film may have several effects, such as the acquisition of new knowledge, the experience of personal situations, etc. The formal elements of an audio-visual document, such as for instance the camera angles and shots, the background music, the sound effects, the visual techniques, etc., although providing the viewer with a considerable amount of information, can increase the complexity of the message and hinder its understanding (Collins, 1983). When viewers are very young, according to Calvet (1999), the sound and visual effects are what attracts their attention most and enhances their ability to remember the contents and its representation. There is evidence that children remember more action than dialogue (Calvet, 1999). In some way, the images help them to understand language better. In contrast, as the age of the viewers increases, they can distance themselves from the purely perceptual characteristics and effects, and respond more to the content (Torres, Conde, & Ruiz, 2002).

When there is a hearing loss, the perception of the sounds may be insufficient or be distorted, as may that of the oral language, not only because of the difficulties of reception but also of understanding this, in the case in which there is delayed language development. Deaf people also present differences compared to hearing people with regard to visual attention. In this sense, neurological studies performed coincide in demonstrating that deaf people pay more attention to the peripheral information in the visual field than do hearing people. While hearing people pay attention to the core information, the deaf pay attention to the peripheral elements to a greater extent. According to some authors, this gives rise to greater distraction with regard to the main content of the film (Bavelier, Dye, & Hauser, 2006; Dye, Baril, & Bavalier, 2007; Dye, Hauser, & Bavelier, 2008; Keetay, 1995; Quittner, Smith, Osberger, Mitchell, & Katz, 1994).

Television shows, exhibits and causes emotions, moods and intentions that can occur more or less explicitly. Interpreting, predicting actions, inferring intentions, etc. Requires a certain experience of a psycho-social kind.

The characters' facial and bodily expression helps the viewer to perceive their emotional states. Baron-Cohen et al. (1996) indicate that from the 5 years of age, children can recognise the basic emotions such as happiness, sadness, fear, surprise, anger and displeasure.

In the case of the population with deafness, studies show that at certain ages children with hearing loss presented a delay in recognising emotions, compared to hearing

children, because of difficulties in language acquisition (Dyck, Farrugia, Shochet, & Holmes-Brown, 2004; Kusche, Garfield, & Greenberg, 1983); however, they say that this deficiency is not stable, but that recognising emotional expressions improves with age, as they have more opportunities for social interaction (Hosie, Gray, Russell, Scott, & Hunter, 1998).

Dyck and Denver (2003) have designed a programme (The Funny Faces Programme) to help the deaf improve their recognition of emotions. The programme, which consists of 11 sessions, was applied to 14 boys and girls from 9 to 13 years of age with profound, severe and moderate deafness attending ordinary oral mode schools. The results indicate a considerable increase in vocabulary with regard to emotions, a better understanding of the meaning of emotions, as well as a greater speed and accuracy in recognising the emotions of all the participants. In the case of children with moderate and severe deafness, the vocabulary and understanding of emotions are comparable to those of hearing children, however, the participants with profound deafness obtained lower results than hearing participants in terms of the speed and accuracy in recognising emotions.

It has been also found that it is above all deaf girls who show a special sensitivity for perceiving the emotional states of characters when they are watching a film on television (Cambra, Silvestre, & Leal, 2008). This sensitivity often occurs more frequently among girls in general, as some authors (Pasquier, 1999) have demonstrated.

This current research concern to the general interest about how to learn different forms of interpretation, understanding and internal processing in those watching a television series. When individuals watch a film on screen; how do they interpret the stories they are seeing, and the images, the dialogues and the different effects that all these have?. Which types of content or themes do they attach the greatest importance?. What aspects of this content? Which of them do they retain and which of them do they omit? What relationships, implications and inferences do they draw from these scenes that they watch? Presumably, such interpretations obviously depend to a large extent on personality, ideas, thoughts and previous experiences, culture, sex, etc. However, this general interest has led us to attempt to analyse the different interpretations of a group of adolescents on viewing a short film, and in particular it has led us to investigate the similarities and differences that may occur between a group of deaf adolescents and another group of hearing when viewing a television series.

The method used to discover the viewer's mental representations tends to be via what he or she expresses using oral or written language. However, other systems of expression can reveal important aspects regarding the aforementioned mental representations.

Several studies into the individual's representational functioning, (Denis, 1979; Ackermann, 1985; Martí,

2003) and its externalisation by means of various systems of expression and symbolisation point to the figurative graphical expression we call drawing as an instrument for exploring representations. Mental representations are psychological entities involving an active reconstruction of the experiences with reality. Individuals can express their internal process using various systems of symbolisation, including verbal expression, gesture and drawing. Each of these systems allows individuals to express aspects of their internal representation that may be equivalent to each other, but may also be different, because of the characteristics of each system: Symbolic systems of an analogue kind - as is the case of drawing - conserve or reproduce various aspects of the objects represented, whereas in the case of language, it is considered that there is a part of our knowledge of the world that is never expressed orally, either because it is not the object of the communication - as is the case of certain memories of pictures, images or melodies - or because we lack the appropriate terms to express them. Written language favours the expression of some aspects, while drawing may encourage other different ones.

Given that our interest lies in exploring the representations made by a sample of deaf and hearing adolescents after watching a short film, we believe that drawing may be an especially useful system of symbolisation because it is an alternative and/or complementary resource to written language, for externalising aspects related to its mental representation. When they draw, individuals select the elements that allow them to reveal their internal representation of the theme drawn, to assign a meaning to them, to relate them, and to organise them into a graphical whole we call drawing (Leal, 2006).

In the case of persons with deafness from birth, who may present a deficiency in the use of language, questions arise relating to the interrelationships between the development of language and other forms of representation. The question could be, whether the graphical representation plays a compensatory role with regard to language deficiency. According to this idea, one might assume that the drawings of deaf people would have a greater wealth and complexity than those of hearing people.

Contrary to this, it might be suggested that, especially in the initial stages of the formation of the mental representation, the linguistic deficiency may involve a deficiency in other forms of representation. However, the results obtained in a study by Silvestre and Cambra (2009) with participants of 3 to 5 years of age, although they revealed certain differences between deaf and hearing pupils, did not do so in the sense of a greater competence of one group or the other.

This present study focuses on a particular stage of development - adolescence - in which the various forms of representation are already differentiated and formed, and therefore participants are able to combine them fluently. Nonetheless, the question remains whether there is a greater

competence in, or preference for, the use of graphical representation by deaf students.

The objective of this study is to assess and compare the representations that two groups of adolescents - hearing and deaf - externalise by drawing a comic strip after watching a fragment of a TV series.

Three specific objectives derive from this general objective: to use the drawing of a graphical story to analyse and compare the overall representation of a story (a fragment of a television film) in its entirety; to analyse the representation of each of the scenes in the story; and to analyse the expression - or lack of it - of the dialogues between the characters, as well as the attributing of mental states (thoughts, feelings, etc.).

Method

Participants

The sample consisted of 20 deaf adolescents (11 girls and 9 boys) aged 12 to 19, studying for at secondary school studying vocational training or for their high school diplomas, or who were studying the equivalent of A-levels or further education courses at other ordinary learning centres in Barcelona, and 20 hearing classmates of the same sex and age.

In the case of the sample of deaf adolescents, five presented a severe degree of hearing loss (hearing loss between 70 and 90 decibels) and 15 a profound deafness (hearing loss exceeding 90 decibels and with remaining hearing ability up to 4000Hz, except in one case). Due to the generations to which the participants with profound deafness belonged, they did not benefit in time from the use of cochlear implants. They all wore hearing aids and their schooling had always been in normal oral mode educational centres while receiving the support of a speech therapist at the same centre. They did not use sign language to communicate, and did not present any other associated disability.

Instrument

TV series. The film used in the study is a montage developed for the study by selecting short fragments of a TV series called *El cor de la ciutat* (The heart of the city) that was broadcast on the TV3 television channel in Catalonia over five years ago. This is an attempt to avoid the effect of remembering, in the event of any of the participants having seen the series.

The film presents a brief 8 minute story in which an adolescent girl decides to care for her grandfather who is suffering from Alzheimer's disease, but finds this difficult to achieve.

The story consists of 6 scenes:

1. In the first of these, the protagonist, whose name is Nuria, argues with her mother and her aunt because they have had her grandfather put in a care home. Nuria wants to bring her grandfather home and take care of him. The characters are in profile throughout the scene. The characters are in medium shot (from head to waist).
2. In the second scene, the protagonist, who is living with her grandfather, is trying to convince him to attend a memory-training centre, but he insists that the rehabilitation sessions don't do him any good. In this same scene, Marta, a friend of the protagonist who also lives with her, appears and that says she cannot help her because she has to go to work. The characters are in profile, combining medium-long shots (from head to knees) with medium shots.
3. In the third scene, which starts with a piano piece as background music, the grandfather, sitting on a sofa, interrupts his granddaughter's piano recording to remind her that they have to go shopping. The characters are shown in close-up as they talk (the face and the top of the shoulders is shown).
4. The fourth scene takes place in the supermarket where Nuria's friend Marta works, and a dialogue is established in which the protagonist tells her friend about the problems she has with her grandfather, and his strange behaviour. The girl and her friend are shown in close-up while they are talking.
5. In the fifth scene, the grandfather refuses to leave the house to go to the centre, and the protagonist is desperate because she does not know how to convince him. The characters are in profile while they are talking. A combination of close-ups and medium-long shots (from head to knees) are used.
6. In the sixth and final scene of the film, the protagonist explains to her mother the difficulties that she is having in dealing with her grandfather, and asks her for advice on what she should do. The mother tries to make her understand that these problems are only the beginning of a more serious problem, and that therefore the old people's home is the best solution. In this scene, while the mother is presenting her point of view, music is introduced that contributes to creating an emotional climate of sadness, and at the same time there is a close-up of the protagonist, who is emotionally affected as she listens to her mother. In the end she gets up and leaves without saying anything.

Procedure

Both the deaf and hearing adolescents are shown the film under identical conditions, i.e. without captions.

After watching the film individually, the participants are asked to draw a story about what has happened in the story they have watched, telling them that they can use any of the graphical resources that usually appear in comics, such as speech and thought bubbles. In addition, they are asked to write a brief explanatory text beneath each vignette, as are usually seen in comics.

To analyse the overall representation of a story there were considered the following aspects: an understanding of the sequences of the story (the characters' intentions, the conflict and the outcome); the number of scenes they draw, and those they omit; the number of vignettes they draw for each scene; and the type of drawing they produce.

Secondly, the representation of each of the scenes in the story were analysed in terms of the following aspects: the characters they draw in the vignettes, and the characters they omit; the facial expression of the characters drawn, and their body postures; and elements of context that they draw in the vignettes.

And finally, the expression - or lack of it - of the dialogues between the characters, as well as the attributing of mental states (thoughts, feelings, etc.) were analysed taking into account what the two characters in the film (Nuria and her grandfather) say and think.

Results

Overall representation of the story

The assessment of the overall representation of the story has been performed taking into account the portrayal and intentions of the characters, the development of the action and the conflict, and the outcome of the story. In the main, it has been assessed from the perspective of the protagonist, as the guiding thread of the story, and by considering the statements that appear either in the speech bubbles of the cartoons drawn, or in the text written beneath the vignette.

Portrayal and intentions of the characters

Analysis of the productions obtained based on the criterion of the characters' presentation and intentions have allowed us to arrange them into the following categories:

1. This includes all drawings and statements that begin the story by explaining the content of the protagonist's intention of caring for the grandfather in the context of the discussion.
2. This includes all drawings and statements which are initiated on the assumption that the protagonist is caring for her grandfather without any discussion about the intentions of the various characters.
3. This includes the drawings and statements that do not show the protagonist's intentions, but do show the discussion - sometimes expressed with content and other times without showing its content.

4. This includes the drawings and statements that start out by showing the situation of caring for her grandfather as something that the protagonist's mother has imposed on her daughter; and
5. This includes the drawings and statements that do not consist of a presentation, either because they cannot be considered as forming a narration –they reproduce a single image- or because they draw scenes of the conflict directly.

The types of behaviour that are found primarily in the group of hearing adolescents are those related to representing the intentions of the protagonist (1) – 35%, and the discussion indicating the content of the same (3) – 45%. In contrast, there are two types of behaviour that only appear in the group of deaf teenagers, i.e. the imposition of caring for the grandfather which is attributed to the protagonist (4) - 20%, and the fact of not drawing a presentation of the story (5) - 10%. Lastly, it is interesting to note that the original representation of the story showing as a fact that the protagonist has to care for her grandfather (2) is only observed in the group of adolescent girls with deafness -22.7%.

Development of the actions and the conflict in the story

Four categories have been created for analysing the development of the actions and the conflict: (a) the protagonist finds it difficult to control her grandfather and complains that she cannot continue with her studies; (b) expression of difficulties in controlling the grandfather; (c) evidence of the grandfather's problems; and (d) no conflict is presented, but rather a description of actions.

The majority of adolescents, both deaf and hearing, show the difficulties the protagonist has in controlling

her grandfather (2) – 65% of the hearing and 55% of the deaf adolescents. However, the most notable differences between the two groups are found in the way they specify the impact that caring for the grandfather has on the protagonist's studies (1), which in the case of hearing adolescents is 35% and only 15% in the group of deaf adolescents. In this sense, it is the girls in both groups (31.8%) who show greater concern than the boys (16.6%). Representation of the grandfather's problems (3) is only observed in one deaf boy, and the absence of conflict (4) in 4 deaf adolescents.

Final outcome of the story

Lastly, based on the analysis of the final outcome of the story, 5 categories have been formed: (1) the protagonist accepts that she cannot take care of her grandfather; (2) the protagonist does not want to give up caring for her grandfather; (3) the final reaction of the protagonist is not made explicit; (4) the protagonist asks for help; and (5) there is no vignette referring to the outcome of the story.

The majority of deaf adolescents, both boys and girls, specified that the protagonist asks her mother for help in continuing to take care for her grandfather (4) – 40%, whereas none of the hearing adolescents did so. In contrast, in the case of the hearing group there was a more homogeneous distribution among those who drew the protagonist accepting that she was unable to care for her grandfather (1) - 45.4%, those representing the protagonist as not wanting to give up caring for her grandfather (2) - 36.4%, and those who did not specify the final reaction of the protagonist (3) – 55%. It should be noted that there were 3 deaf adolescents, a girl and two boys, who did not draw the outcome of the story (5).

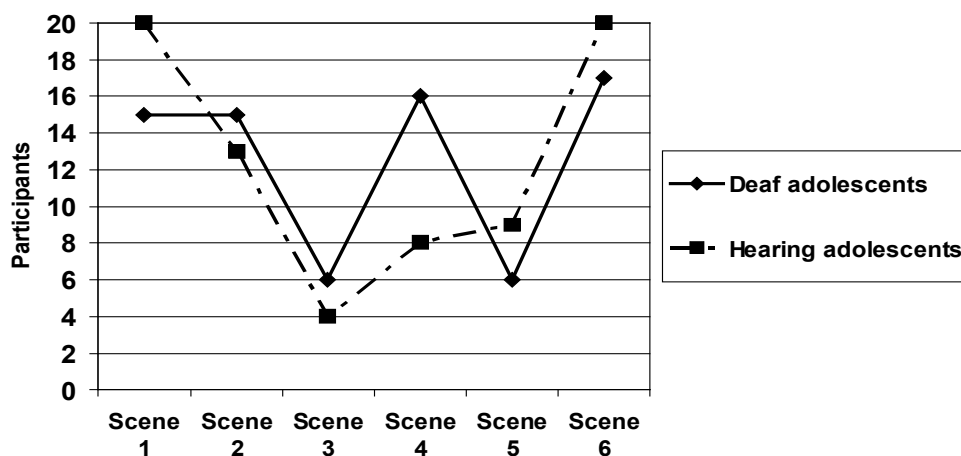


Figure 1. Number of adolescents drawing each scene.

Number of scenes drawn, and scenes that were omitted

Also analysed was the scenes that the young deaf and hearing people either drew or omitted. In this sense, both groups follow a very similar profile, as can be seen in Figure 1, except in the case of the first and fourth scene. In the graph, the drawings of the group of hearing adolescents show a curve in the form of a “U”, in such a way that the first and last scene are the one that appear most often in their stories, and the scenes in the middle of the film have less presence. By contrast, in the case of the deaf group, there is an irregular curve that falls and rises alternately, scene after scene.

The first scene, which corresponds to the presentation of the characters and orally introduces the intention of the protagonist of the film, is drawn with greater frequency by the hearing group. In contrast, Scene 4, which reinforces the feeling of powerlessness that the protagonist feels with regard to caring for her grandfather, and is the only scene in the film that develops in a different context to the other scenes (in a supermarket), is the one most often drawn by the deaf group.

Number of vignettes drawn for each scene

Another element explored is the number of vignettes used to depict each scene. In the case of the hearing group, the scenes at the beginning and the end of the film are those that require more than one vignette to represent them, unlike the two middle scenes, Scene 3 and 4 - which the majority of hearing adolescents omitted, and those who did draw them did not use more of than one vignette (see Figure

2). From a statistical point of view, significant differences have been found in terms of gender with regard to the total number of vignettes used in the comic strip: the girls drew more vignettes than the boys ($t = 2,231$; $P = .046$).

In contrast, in the stories drawn by the deaf group, in the case of both boys and girls, it was observed that, except for Scene 5, all the other scenes have been drawn, at least once, with two vignettes, and even with three, as in the case of Scene 2 which corresponds to the beginning of the conflict in the story (see Figure 3).

Type of drawing produced

With regard to the drawings they made in their stories, 45% of those from both the hearing and group and the deaf group are representations that attempt to resemble reality. The rest of the participating adolescents (55%) produced more schematic representations, which in some cases incorporated facial features (25% of the hearing and 20% of the deaf) and in other cases did not. It should be noted that statistically significant differences have been found in the group of deaf adolescents in terms of the type of drawing produced. In this sense, the boys and girls between 12 and 15 years of age with hearing deficiency used fewer schematic representations in their depictions than those between 16 and 19 years of age ($t = -2,862$; $P = .010$). No doubt in older age groups there is a trend towards the use of schematisation.

Representing each of the scenes of the story

There follows an analysis of the way in which the adolescents in the sample depicted each scene, following

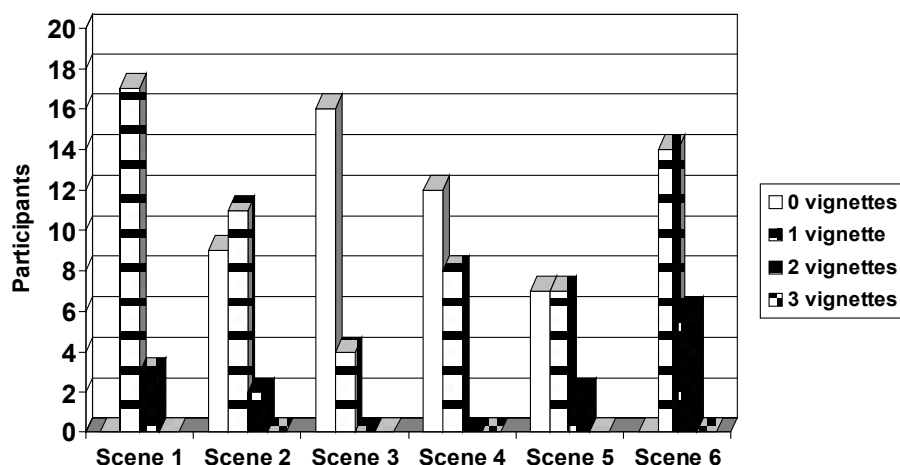


Figure 2. Number of vignettes drawn by the hearing adolescents in order to represent each scene of the film.

the order of the scenes and observing the characters drawn in the vignettes and those that were omitted, the facial expression body postures drawn, as well as the elements of the context that they incorporated into the vignettes.

Scene 1. An argument between the protagonist and her mother and her aunt about putting her grandfather in a home

The great majority of our hearing adolescents grouped the three characters together in the following way: On one side of the vignette they drew the protagonist and on the other side end her mother and her aunt. The spatial distance between the two groups of characters reinforces the situation of confrontation and argument that is represented in this scene. The depictions produced by the deaf adolescents of this first scene coincide with the distribution of the characters seen with the hearing adolescents. The only element of note was that one participant left out the character of the aunt in the vignette.

Both groups represent the anger of the protagonist by means of facial expression, in particular the hearing adolescents. The deaf group draws the characters with their mouths open, thereby showing that a communicative verbal exchange is taking place.

This is a scene that is drawn with very few contextual elements of the surroundings. In the sample of hearing adolescents, 4 of the group drew an isolated element: a table, a painting, a door or a decorative object. In the case of the deaf adolescents, one drew a sofa and another, a table.

Scene 2. The difficulties that the protagonist Nuria has in convincing her grandfather to go to a memory-training centre

In this scene there are three characters (the grandfather, Nuria and her friend Marta), although all three are not always drawn. In fact only one hearing adolescent and five deaf adolescents drew all three. 50% of the adolescents from each group drew the grandfather and Nuria, these being in fact the two characters on which the scene's action focuses, although they omitted Nuria's friend. Other options are also observed, such as the two deaf participants and one hearing who drew Nuria and her friend Marta. In the group of hearing adolescents there was even one who only drew Nuria, and another who only drew her friend Marta, omitting the grandfather in both cases.

The adolescents in the sample coincided in presenting the grandfather with a sad facial expression, and in some cases with a look that could be described as absent. In contrast, they represented Nuria with her eyes and mouth open, and with a body posture that depicted her angry state.

In this second scene, which takes place inside the house, there is an increase in the number of context elements drawn, especially in the case of the sample of deaf adolescents. We noted, for example, the detail of the table ($n = 5$) and the door where the grandfather appears on the scene ($n = 4$). In some cases they added isolated objects that appear in the film scene, such as a sofa, a painting, a flower arrangement, a piece of furniture and clothes on the table. In contrast, only two of the group of hearing adolescents drew the table.

Scene 3. The grandfather interrupts Nuria while she is playing the piano

This is the scene that appears drawn with the least frequency. The most noticeable difference between the

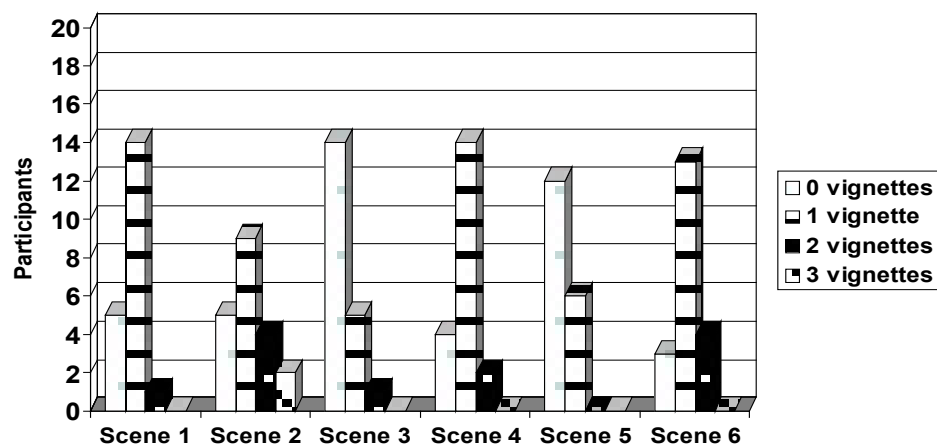


Figure 3. Number of vignettes drawn by the deaf adolescents in order to represent each scene of the film.

hearing group and the deaf group are the allusions to the music heard: there are two deaf participants who drew musical notes, thus indicating that they perceived the music aurally; whereas none of the hearing adolescents refer to this detail in their drawings.

The graphical representation, in contrast, is highly similar in both groups: they draw the grandfather sitting on a sofa reading a newspaper, as shown in the beginning of this scene, and Nuria to one side of the vignette. Only one participant in each group has drawn the grandfather while omitting the Nuria character, thus giving him a greater role in the scene.

Logically the context elements that are repeated most often are the sofa and the newspaper, although it is noteworthy that the deaf adolescents include other objects from the scene in their graphical story: a bookcase, a door and a table with a vase of flowers.

Scene 4. This takes place in a supermarket, and focuses again on the conversation between Nuria and Marta about the grandfather

This is the only scene that takes place in a different context from the other scenes. It is also the scene that reveals the greatest number of differences between the two sample groups regarding the number of graphical stories, as has already been discussed above.

Regarding the characters, most of the hearing adolescents only drew two of the three characters appearing in the scene - Nuria and her friend Marta, and only three participants also drew the grandfather, who appears in the background at the end of the scene. In contrast, in the

group of deaf adolescents, eight participants drew the three characters and seven drew Nuria and her friend. Only one participant from this group omitted the Marta character and just drew Nuria and her grandfather.

The most often drawn contextual element is the shelf of exhibited products that acts as a backdrop while Nuria and Marta are holding a conversation, and the shopping cart that the grandfather pushes at the end of the scene. Of note is the drawing that two deaf participants produce to highlight the fact that the action takes place in a supermarket: one does so by reproducing the supermarket's logo, while the other writes the word "Supermarket" on a sign.

Scene 5. Nuria's grandfather once again refuses to leave the house and she tries to convince him

This scene is very similar to Scene 2, not only because it occurs in the same context, but also because of its content.

The hearing participants who depicted this scene drew Nuria and selected one of the two other characters, her friend Marta or her grandfather, but in no case did they draw the three characters in the vignette. In contrast, three deaf adolescents drew the three characters that appear in the scene, another three drew only Nuria and her friend, and two participants drew Nuria and her grandfather.

The adolescents in both groups drew isolated elements such as the door, the table with some object on it, shelves, a painting, with one of the deaf participants even writing on a sign "home", where the action takes place.

Scene 6. The protagonist asks her mother for advice on looking after her grandfather

Table 1
Content of the speech bubbles indicating what Nuria says in the comic strip

CONTENT of the SPEECH BUBBLES indicating what NURIA is SAYING	HEARING ADOLESCENTS	DEAF ADOLESCENTS
1. Willingness to take care of the grandfather	15	5
2. Reproaches to her mother and aunt	13	3
3. Doubts about what to do with the grandfather	12	5
4. Demonstrations of caring for the grandfather	15	19
5. Worry about the repercussions on her of the problem of the grandfather	6	1
6. Expressing emotion	1	-
7. Accepting responsibility	2	2
8. Asking for help	1	1
9. Feelings of affection towards the grandfather	1	1
10. Recognising the grandfather's problem	2	4
11. Indications of the grandfather's disturbance	1	2
12. Complaints and criticism aimed at the grandfather	3	9
13. The grandfather's psychological characteristics	-	3

This final scene, expressed by all the members of the hearing group in the sample and the majority of the deaf group, is given a greater relevance than the other scenes. The most represented depiction coincides with the images from the scene: Nuria and her mother sitting on each side of a table that separates them physically, although the hearing adolescents drew them more often standing than sitting.

The perception of the protagonist's state of mind varies: Sometimes she is drawn crying, although this emotion is at no time exteriorised during the scene; and others drew her angry, a feeling they express essentially by means of the facial features.

Attributing states of mind (thoughts, feelings, etc.)

This section will analyse the "speech and thought bubbles" drawn in the graphical story, to make their characters "talk", "think" or "feel". The expressions that show what the main characters in the film (Nuria and her grandfather) are saying and thinking have been analysed. The written expressions contained in the speech and thought bubbles have been grouped into categories depending on their content.

What Nuria says and thinks

The majority of the participants used the speech/thought bubble resource when drawing the protagonist in the comic strip. In the group of hearing adolescents, 18 participants drew speech and thought bubbles, as did 14 deaf adolescents. The content of the speech bubbles which the adolescents use to make the characters speak is quite similar in both groups, but not so the frequency in which they are used (see Table 1).

The deaf adolescents, like the hearing, stress in particular the expressions that show Nuria caring for grandfather ("How are you?"; "What's the matter?"; "You

have to go to memory class"; "Are you alright?"), but there is also a considerable number of complaints against him ("Now he suddenly wants to go shopping"; "He's becoming a pain"). In contrast, in the speech and thought bubbles the hearing adolescents highlighted Nuria's complaints aimed at her mother and aunt ("Can't you love Grandad a bit more!"; "Why did you put him in a home?"; "Why didn't you ask me to do my part?"), her intention to take care of her grandfather ("I can look after him"; "I'll deal with it myself"; "I don't want to abandon him"), and the queries that arise while living with the grandfather ("He gets worse every day. I don't know what to do"; "Am I doing everything right?"). This type of content is much less relevant for the deaf adolescents. Another of the differences observed, in terms of the number of references, are the demonstrations of concern about the impact of the grandfather's problems on Nuria's studies, and these are particularly highlighted by the hearing adolescents with expressions such as: "I can't afford to miss any more classes"; "Things are getting very awkward for me"; "Now I won't go to school today"; "I haven't been able to study".

On the other hand, content that is specific to each group of participants should be stressed; i.e. that which appears exclusively in one of the two sample groups. Thus, in the hearing group a participant can be seen showing the protagonist crying by using an expression that is very common in comics ("sniff-sniff"); while only the deaf group stresses the psychological characteristics of the grandfather expressed by Nuria ("Grandad is odd"; "He's not right in the head").

In reference to what the protagonist thinks, represented by drawing thought bubbles, as can be seen in Table 2, eight thought bubbles appear in the graphical stories drawn by the hearing adolescents, compared to only two drawn by one deaf girl in different vignettes.

The complaint content is the only one in which both sample groups agree. The hearing adolescents added other

Table 2
Content of the thought bubbles indicating what Nuria thinks in the comic strip

CONTENT of the THOUGHT BUBBLES indicating what NURIA is THINKING	HEARING ADOLESCENTS	DEAF ADOLESCENTS
1. Reproaches to her mother and aunt	-	1
2. Doubts about what to do with the grandfather	1	-
3. Demonstrations of caring for the grandfather	1	-
4. Worry about the repercussions on her of the problem of the grandfather	1	-
5. Recognising the grandfather's problem	1	-
6. Not recognising the problem	1	-
7. Complaints	1	1
8. Wishing that the grandfather would get better	1	-

content, some more positive, such as those referring to the wish for the grandfather to get better (“Get well!”), and examples of care towards the grandfather (“Don’t worry, I’ll look after you”); and others that show the protagonist’s concern about the care that her grandfather should receive (“Grandad doesn’t listen to me, what can I do?”) and its impact on her studies (“Today I am also missing classes”). It is also interesting to note the opposing postures stressed by two hearing participants, with one recognising the problem of the grandfather’s health (“I think that the solution would be to have him taken into care”) and another, in contrast, refusing this (“No way”).

What the grandfather says and thinks

The same thing does not occur when analysing the grandfather’s speech and thought bubbles, since both groups, hearing and deaf, differ from each other not only in the number of references made, but also in the type of content, which is more varied in the group of deaf participants (see Table 3).

The most noticeable difference between the two sample groups is found in the number of references to the grandfather’s rejection of being looked after by his granddaughter Nuria. The vast majority of the hearing adolescents focused on this type of demonstration by the grandfather - 14 hearing as opposed to only 2 deaf adolescents (“Leave me alone”; “I don’t want to go to memory classes”; “I don’t want to go to the home”; “I don’t want to go out”; “I’m not going anywhere, I’m staying here”).

The content of the speech and thought bubbles that the deaf adolescents attributed to the grandfather are manifestations that reinforce the bonding between him and Nuria. Some are compliments (“You play the piano really well”) and positive feelings (“I love you very much”); and others are calls for her presence and care (“Are we going shopping?”).

With regard to what the grandfather is thinking, there is only one deaf participant who attributes the grandfather

with an emotional feeling towards Nuria, and who includes the drawing of his granddaughter surrounded by hearts, thereby showing his affection and regard for her.

Discussion

The analysis of the mental representation of the adolescents after seeing a story of a TV series, based on drawing a graphical history, allows us to conclude that there are several similarities between the deaf and hearing boys and girls, but also some differences between them.

In general, a very similar profile is seen between the hearing group of participants and the deaf group with regard to the presence of scenes of the film in the stories drawn. Both groups highlight the beginning and the end of the story, perhaps recognising their importance in understanding the story. The intermediate scenes are drawn to a lesser extent. However, one of the scenes - that corresponding to the supermarket - precisely the one that takes place in a different context to the others, receives a special attention from the majority of the group of deaf girls and boys.

In this regard, as we have been able to observe by analysing the different scenes drawn by both groups of adolescents, the deaf boys and girls often drew the contexts of the scenes they selected. In contrast, the hearing adolescents tended to focus more on the characters’ facial features. This seems to show an inclination to express in detail the locations, the places where situations happen with the characters - an inclination that is not so prevalent among the hearing adolescents. With regard to the frequent mention by the deaf group of the scene in which a different context to the rest of the story appears, i.e. the scene in the supermarket, we believe that this could respond to the aforementioned attention to the detail of the contexts manifested in the drawings of deaf adolescents. These results coincide with those found in studies into the visual attention of deaf persons, which conclude that they pay more attention to the peripheral elements of the visual field that contextualise the scene, whereas hearing people do so more in the elements of the central visual field.

Table 3

Content of the speech bubbles indicating what the grandfather says in the comic strip

CONTENT of the SPEECH BUBBLES indicating what the GRANDFATHER is SAYING	HEARING ADOLESCENTS	DEAF ADOLESCENTS
1. Indications of the grandfather’s disturbance	1	3
2. Rejection of the care and attention	14	2
3. Greeting	1	2
4. Asking for help	1	3
5. Demanding Nuria’s presence	-	2
6. Complementing Nuria	-	3
7. Requesting care and attention	-	3
8. Feelings of affection towards Nuria	-	2

In addition, the graphical expression of sound elements among some adolescents with deafness is well-known, such as drawing musical notes to show that music is heard in the scene; or signs to indicate the context where the action is taking place. This behaviour might be easier to understand if we take into account the type of school training that deaf students receive, based on repeatedly checking the understanding of new knowledge provided by the teachers in order to ensure the acquisition of learning.

In terms of the number of vignettes used to express the story, we note that in general the hearing group draws a smaller number of cartoons than the deaf adolescents, who often draw all the characters in the scene regardless of their relevance to the events. These differences between the two groups regarding the number of scenes drawn, the repetition of some of these in several vignettes, and the quantity and the detail of the spaces and places, perhaps suggest somewhat different ways of selecting the relevant aspects of the observed story for each group; ways of searching for similarities, the analogies between the drawing of their stories and images viewed on the screen, that are not entirely similar in either group.

Regarding the protagonist's expressions, in the sample of adolescents as a whole there is particular allusion to the care of the grandfather, as well as to the complaints and accusations made against him. The hearing adolescents express and place relevance on the conflict expressed and the emotional aspects of the protagonist, what she thinks, feels, doubts..., whereas the deaf adolescents make these aspects somewhat less explicit, especially those which refer to the protagonist's thoughts.

In this regard, the group of deaf adolescents as a whole place less emphasis on Nuria's willingness to take care of her grandfather, and produce more drawings that constitute reproaches against the grandfather. The fact of not explaining the intentions of the protagonist can be interpreted as meaning that part of the participants of the deaf group take it as given that the protagonist should care for her grandfather and do not see it as a decision made by her.

Nonetheless, the emotional verbal expression that the deaf group attributes to the character of the grandfather is noteworthy. Social and affective attributes predominate, an aspect that does not appear in the hearing group. This invites us to suggest the possibility that those in the hearing group, who can hear the utterances, express in particular the conflict caused by the grandfather and his less sociable aspects, while the deaf group perhaps blurs the conflict in favour of an image of a grandfather who is affectionate with his granddaughter - an image nearer the archetypal grandfather.

In short, some differences were found between the group of deaf adolescents and the hearing group, some of which were initially envisaged, such as the greater profusion of the use of graphical representations (more contextual details, more characters represented, etc.), as well as the coinciding with the studies, that show the predilection for

peripheral attention shown by the deaf participants in the study, especially in representing Scene 4.

It is important to note that some of the differences between the group of deaf adolescents and the hearing group can be interpreted, without doubt, as arising from the difficulties of understanding certain elements of the story as a result of these being transmitted orally, as is the case, for example, of the protagonist's intention of taking care of her grandfather. This may possibly explain why the hearing group expresses more complaints about the characters representing the protagonist's mother and aunt. Also certain aspects of the conflict which are not evident in the images, such as the incompatibility of caring for the grandfather and continuing to study at the same time, are retained by the hearing participants yet not, in contrast, by the deaf adolescents. Lastly, the interpretation of the final scene by both groups is different, although this is not easy to interpret. In fact, almost half of the deaf adolescents depict the request for help, while none of the hearing participants do so. One possible interpretation of this is that most hearing participants interpret the protagonist as having voluntarily agreed to care for her grandfather, and that the help she is asking for is in the form of advice rather than material assistance.

In conclusion, these initial findings invite us to examine the relationship between language comprehension and image interpretation in greater depth in future research. In this sense, the exteriorising of the mental representation could be supplemented by means of other forms of assessment, such as oral expression or questions with multiple choice answers.

References

- Ackermann Valladao, E. (1987). Que deviennent les idées a propos d'un phénomène, une fois retraduites a travers différents médias? Le rôle du dessin, du récit et du geste dans la construction d'une connaissance.[What happens to ideas about a phenomenon, once translated back through different media? The role of drawing, narrative and gesture in the construction of knowledge]. *Archives de Psychologie*, 55, 195-218.
- Bombi, A. S., & Pinto, G. (1993). *Los colores de la amistad* [The colours of friendship]. Madrid: Visor.
- Baron-Cohen, S., Riviere, A., Fukushima, M., French, D., Hadwin, J., Cross, P., et al. (1996). Reading the mind in the face: a cross-cultural and development study. *Visual Cognition*, 3(1), 39-59.
- Bavelier, D., Dye, M. W. G., & Hauser, P. C. (2006). Do deaf individuals see better?. *Trends in Cognitive Sciences*, 10(11), 512-518.
- Cambra, C., Silvestre, N., & Leal, A. (2008). Función de la subtítulos y la interpretación de la imagen en la comprensión de los mensajes televisivos: la comprensión de una serie por parte de los adolescentes sordos. [The captioning function and

- image interpretation in understanding television content: Deaf adolescents' understanding of a television series]. *Cultura y Educación*, 20(1), 81-93.
- Calvert, S. L. (1999). The form of thought. In I. E. Siegel, ed. *Development of mental representation: Theories and applications*. London: LEA
- Collins, W. A. (1983). Interpretation and inference in children's television viewing. In J. Bryant, & D. R. Anderson, eds. *Children's understanding of TV: Research on attention and comprehension*. San Diego, CA: Academia Press.
- Denis, M. (1979). *Las imágenes mentales*. Madrid: S. XXI
- Dyck, M., & Denver, E. (2003). Can the emotion recognition ability of deaf children be enhanced? A pilot study. *Journal of Deaf Studies and Deaf Education*, 8(3), 348-356.
- Dyck, M., Farrugia, C., Shochet, I., & Holmes-Brown, M. (2004). Emotion recognition ability in deaf or blind children: do sounds, sights, or words make the difference?. *Journal of Psychology and Psychiatry*, 45, 789 -800.
- Dye, M. W. G., Baril, D. E., & Bavelier, D. (2007). Which aspects of visual attention are changed by deafness? The case of the attentional network test. *Neuropsychologia*, 45, 1801-1811.
- Dye, M. W. G., Hauser, P. C., & Bavelier, D. (2008). Visual attention in deaf children and adults. In M. Marschark & P. C. Hauser eds. *Deaf cognition: Foundations and outcomes* (pp. 250-263) New York: Oxford University Press.
- Hosie, J. A., Gray, C. D., Russell, P. A, Scott, C., & Hunter, N. (1998). The matching of facial expressions by deaf and hearing children and their production and comprehension of emotion labels. *Motivation and Emotion*, 22(4), 293-313.
- Keetay, V. (1995). The effect of visual distractions on speech perception in children. *The Volta Review*, 98(2), 43-54.
- Kusche, C. A., Garfield, T. S., & Greenberg, M. T. (1983). The understanding of emotional and social attributions in deaf adolescents. *Journal of Clinical Psychology*, 12(2), 153-160.
- Leal, A. (2006). Simbolización gráfica: medio de expresión e instrumento del pensamiento. [Graphic symbolization: a means of expression and instrument of thought]. *Infancia y Aprendizaje* 29(2), 203-218.
- Martí, E. (2003). *Representar el mundo externamente*. [Representing the outside world]. Madrid: Antonio Machado.
- Pasquier, D. (1999). *La culture des sentiments*. [Culture of feelings]. Paris : Maison des Sciences de l'Homme.
- Quittner, A. L., Smith, L. B., Osberger, M. J., Mitchell, T. V., & Katz, D. B. (1994). The impact of audition on the development of visual attention. *Psychological Science*, 5(6), 347-353.
- Silvestre, N., & Cambra, C. (2009). Graphic representation and language: Drawings in deaf students aged three to five. *European Journal of Psychology of Education*, 24(1), 3-15.
- Torres, E., Conde, E., & Ruiz, C. (2002). *Desarrollo humano en la sociedad audiovisual*. [Human development in the audiovisual society]. Madrid: Alianza Psicología.

Received July 22, 2009

Revision received February 12, 2010

Accepted February 15, 2010