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ABSTRACT

Audiovisual contents constitute one of the most common ways of communicating information. However, audiovisual products are difficult to study because they integrate a lot of complex communication and artistic elements. Meaning and emotions are conveyed by combining film elements but also narrative elements, music and other audio aspects, which unfold over time and can be used to impact the audiences. Here, the user experience approach is taken to try to understand the relation between the video's elements and the emotions produced in the audience. Emotions are understood within an appraisal framework where elements of the audiovisual format and content are integrated in memory with previous information. The interpretation of these mental representations constitutes the basis of the experienced emotions. This standpoint is used here to review users' approaches and emotions as applied to the audiovisual format and content, along with aesthetics and interests as complex experiences in the context of films and other audiovisual products. Additionally, mixed-method approaches to studying mental contents and emotions are defended and used.

Appraisal and user-centered theories also suggest that a product's emotional impact is contextually mediated. Following this assumption, we investigated the impact of audiovisual contents in both commercial settings and feature length films. The influence of cultural factors was also reviewed and studied. Recent research suggests that aesthetics and visual design are culturally mediated; however, filmmakers assume that film elements equally impact culturally different viewers. The studies on this dissertation support this mixed conclusion: 1) Culturally loaded video products seem to be differently represented by Spanish and Finnish viewers. 2) Different aspects of the videos appear to have varying impacts on viewers depending on their nationalities, 3) videos, relative to static images, seem to reduce the differences in the mental representations of the commercial products. 4) Finally, films produced in countries differing in the cultural dimension share elements that provoke the audiences' interest. This finding suggests that video elements induce universal emotions that balance out other possible cultural biases.

Keywords: Emotional experiences, Film audiences, Commercial videos, Interest, Universal emotions, Cultural diversity, Cosmopolitan orientation, Aesthetic experiences, Appraisal.

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FIGURES

TABLES

LIST OF INCLUDED ARTICLES

I.   Cañas-Bajo, J., Perälä, P. M., Silvennoinen, J. M., & Saariluoma, P. (2015, September). Affective contents of cross-cultural audiovisual experience. In *Proceedings of the 19th International Academic Mindtrek Conference* (pp. 82–88). ACM.

II.   Cañas-Bajo, J., & Silvennoinen, J. M. (2017). Cross-cultural factors in experiencing online video contents in product marketing. *International Journal of Art, Culture and Design Technologies, 6*(1).

III.   Cañas-Bajo, J. Cañas-Bajo, T., Berki, E., Valtanen, J. Saariluoma, P. (2017). Designing a new method for studying feature length films: An empirical study and its critical analysis (Submitted to Poetics).

IV.   Cañas-Bajo, J. Cañas-Bajo, T., Saariluoma, P. (2017). Emotional experiences about films: Are they universal or culturally mediated? (Submitted to journal of Visual Culture)

V.   Cañas-Bajo, J., Leikas, J., Jokinen, J., Cañas, J. J., & Saariluoma, P. (2016). How older and younger people see technology in Northern and Southern Europe: Closing the generation gap. *Gerontechnology, 14*(2), 110–117.

VI.   Cañas-Bajo, J., Santamaría-Muñoz, L., Valtanen, J. P., Berki, E., Ross, M., & Staples, G. (2015). Multicultural edutainment role models for women IT professionals – an innovative proposal to creative industries. *Twentieth International Conference on Outlook on Computing Education.*

In the six articles (listed on the preceding page), all of the authors worked in close collaboration. As the principal author, I was responsible for the main lines of thought, as well as for the data analysis. Articles 1 and 3 were prepared in close collaboration with Pertti Saariluoma. The early planning of the articles was done collaboratively, and comments and suggestions were added during the writing and the revision stages. For Article 1, Joanna Silvennoinen helped with the statistical and the qualitative data analyses. Piiä Perälä assisted in conducting the experiment in Jyväskylä University and performing the data analysis. For Article 3, Eleni Berki acted in the supervisor´s role. Eleni Berki and Juri Valtainen helped with comments and suggestions during the design of the study and the writing and the revision stages. Teresa Cañas-Bajo participated in the data analysis and interpretation. For Article 2, the statistical work and the qualitative data analysis were undertaken in collaboration with Joanna. The first and the second authors participated in the writing process and were responsible for the theoretical line of thought in the study. For Article 4, Pertti Saariluoma acted in the supervisor´s role and helpped with comments and suggestion. The statistical work was undertaking in collaboration with Teresa Cañas-Bajo. For Article 5, Jaana Leikas designed the questionnaires and helped with the data collection process in Finland. Jussi Jokinen assisted with the statistical analyses. Jose Juan Cañas helped with the data collection process in Spain. Pertti Saariluoma served as the supervisor. Article 6 was written and discuss in close collaboration with Leyre Santamaria-Muñoz, Juri-Petri Valtanen, Eleni Berki, Margaret Ross and Geoff Staples.

CONTENTS

1   INTRODUCTION

1.1   Significance of the research

1.1.1   Audiovisual information and communication

Over the last decade, a revolution has occurred in the audiovisual field. The rise and the fast development of inexpensive yet high-quality cameras have facilitated non-professionals' creation of their own contents. Additionally, the expansion of the Internet has allowed rapid and massive ways for users to exchange these contents through media platforms, which operate as social networks and connect audiences worldwide. In 2016, the amount of Internet users reached 3.5 billion globally (Internet World Stats, 2016). New media represents a more dynamic way of spreading information and generating feedback from the audience (Mills, 2011; Tyagi & Tyagi, 2012). In this context, video contents play a major role. With the emergence of smartphones and tablets with Internet access and high screen resolutions, users can watch any kind of video anywhere and anytime. The Cisco Visual Networking Index (2015) indicates that Internet protocol (IP) video traffic represented 70% of the total Internet traffic in 2015, and due to the continuous growth, the company forecasts that the figure will reach 80% by 2020. Cultural expression and specifically, audiovisual products need to confront the changes to adapt to the expansion of digital technologies. This expansion offers new possibilities by increasing access to a wider, more globalized public and enriching cultural diversity.

Companies and institutions are aware of the new media context and the audiovisual contents' potential to create fresh ideas, novel ways of communicating with customers, and innovative forms of internal communication among workers. However, it is critical for organizations to understand how to make good use of these new tools, as wrong decisions can lead to misuse and generate negative and opposite reactions of the audience (Powell, Groves, & Dimos, 2011). Audiovisual contents also form part of the

viral phenomena (Eckler & Rodgers, 2010). Despite the advantages of the fast spreading of messages, it also represents serious risks since so far, viral dissemination of information has been poorly understood, unpredictable, and difficult to control. Moreover, massive exchange of information introduces some challenges. First, it is more difficult for a specific video content to become visible due to the noise produced by the huge amount of information online. Second, if the wrong information goes viral, it can damage the reputations of individuals and/or companies. Understanding the elements and the conditions in which a video goes viral is a question that should be addressed to develop strategies that will make individual contents more visible and reduce the risks (Alloca, 2011; Leonhardt, 2015).

1.1.2 Videos in industrial context

Audiovisual contents are now generated for diverse purposes. Many are entertaining or directed to audiences for cultural and aesthetic aims, but often, audiovisual contents are now created to meet the needs of companies. Industrial videos may have different functions within a company. They may serve as marketing tools to sell ideas and products. They can be used to train customers on the use of the products and the services offered by the company (e.g., video tutorial). They can attract new investors or serve as tools for internal communication (Prelinger, 2006; Wilson, Guinan, Parise, & Weinberg, 2011), but these functions are still not well known by companies, and there are no specific guidelines for what features of the videos meet users' needs better. It is imperative for companies to understand the different applications of videos and what elements to consider so as to achieve their goals and make the user experience positive (Felix & Stolarz, 2013; Wilson et al., 2011). Additionally, videos can be useful devices to induce emotions and change consumers' perceptions of an object. The mental representations of a product can be influenced by the emotions attached to the audiovisual contents where the product is inserted (Moran, 1981). By exposing an individual to a video-based content about a product, emotions toward the product can be created, which might lead to a positive tendency to consume it (Wang & Cheong, 2006).

Thus, one of the main concerns of new entrepreneurs is to build a solid foundation for their audience and consolidate a virtual community. Nonetheless, the question is how to make good use of these new tools. Some skeptics of this new communication model emphasize that misuse can lead to negative and opposite desires, thus creating animosity in the audience (Powell et al., 2011). In this context, it is important to study and consider what features of the mass media can cause success or failure in achieving the goal of reaching more people and making the company profit from its use. Without proper guidelines, it might be a mistake for entrepreneurs to put all their energy in expanding the reach of social media yet forget to generate interest in the target audience.

1.1.3 The industry of feature length films

Audiovisual contents are also used for entertainment purposes in the film industry. Films constitute a way of representing a fictional story that the audience members experience as real and continuous during the time when they are exposed to the sequence of events represented in the film (Tan, 1996). The audiovisual language has been the object of many changes throughout the brief history of cinema (see Piccirillo, 2011 for an overview of the major technological developments across the years). Technological developments made it possible to create and enrich the audiovisual language; the play of lights, camera movements and angles, cuts and shots, video editing, and so on, introduced new ways of communication and the possibility to represent more complex aspects of reality. The introduction of sounds, including music, voices, and auditory effects, was also a breakthrough that induced changes in the way of interpretation. This continuous development of language has continued to the present day. It has led artists to experiment with new techniques to move and interest the audience and produce the intended emotional result in the spectators' experience. The outcome of years of innovations and challenges is an industry that moves a large amount of money around the world (UIS, 2016).

However, these technological developments and the continuous changes in the ways that the cinematographic language is used have been experienced many times with excitement and fear. Technology is sometimes viewed as a threat to the aesthetic intentions of films (Belton, 2014). For example, the introduction of sound was welcome by many critics since it enhanced different ways of enriching communication. However, it was also felt by some filmakers and theorists as the death of a type of cinema that mainly relayed on images and visual expressions. Thus, in his essay *"The complete film"*, Arnheim (1957) viewed technological advances regarding sound, colour, or 3D images a threat to the cinema as visual art, represented by silent, black and white films. This is even perceived as more threatening with the advent of digital images, where images of the real world are converted into numeric information for a digital processor to read. The quality of colour, light, texture or sound are registered by digital recording devices that convert the video signal into numeric information and then, when this information is read by digital equipments, it recreates colours, sounds, forms to convey meaningful images. According to some, the digital revolution has been driven more by software and hardware companies and by marketing and economics interests than by any interest to move the moviegoing experience forward (Belton, 2014). Thus, the film critic Roger Ebert, in 1999 after a demostration in the Cannes festival argued that digital movies cannot duplicate the *experience* of analogical films, since they become too dependent on the technological device used to record the images or do the projection. Similarly Manovich (1996) argued that digital technology has made cinema close to animation, away from theatrical art. Digital technology can transform real world into plastic objects and model and remodel them into whatever way is whished by the moviemaker. While this aspect is very

important for special effects in imagined, fantasy scenarios, digital projections do not offer audiences a *new experience* when the movie tries to reflect the real world (Belton 2002).

However, from a different point of view, digital technologies can be seen as interesting challenges for film theories since they introduced completely new forms of experiencing and interpreting films (Wood, 2008a). Because technology leaves traces on the screen through the emergence of competing elements (character, special effects, etc), the viewer needs to distribute its attention to the different elements, introducing choices in viewing and agency when deciding which element to attend and to include in the interpretation of the images (Wood, 2008b). From the later view, digital technology opens up new lines of research and inquires into the attentional strategies and interpretation of digital elements by the viewer.

Digital technologies have also been seen as threatening to cinema not only from the continuous changes in the style of the audiovisual language but also from the new platforms where films can be shown (TVs, mobile phones, tablets, etc.); They are all suitable ways of experiencing films that impose some technical restrains and that have an impact in the way viewers experienced the films. Since 1980 digital technologies economically impacted the film industry by multiple synergies between hardware companies, film studios and cable companies to create integrated entertainment companies. These have busted what has been termed "Convergence" referred to "*the union of audio, video and data communications into a single source, received on a single device, delivered by a single connection*"(Forman & Saint johns, 2000, p. 50). Convergence means that the same content can be delivered from different technologies so that increasingly resemble each other. Thus, computers are similar to television, to tablets or to mobile phones since they can be used to download and view movies from Internet. Convergence has led to the development of video products that can be delivered in a variety of different devices. Digital technologies have now made the studios profit from new markets such as video, cable, television, or video games increasing the fear that the role of theatrical release, and the experience of inmersion from large screens and dark silent theatre viewing could slowly disappear (Belton, 2002). Nonetheless, while these fears are still present, they do not parallel the film industry's economic growth. For example, in 2016, the European film industry increased its profits, with a record of 976.5 million cinema admissions (Kanzler, 2016).

The use of these new platforms and convergence has also been viewed as new systems of communication that deserve theoretical and empirical studies. For example, new concepts as remediation or irritation have emerged to reflect the changes in the environment introduced by the different platforms (irritation) that impact aesthetics and textual conventions (Wood, 2008a), but also introduce new communication networks since convergence involves the flow between the different media, the relation between the aesthetis elements of different platforms, the practioners, the technological elements in the product and the interpretation of this element by the viewer. While convergence has given raised to many theoretical film articles, very few empirical studies have

addressed the impact that convergence may have in the viewers' experience. As we argue in this dissertation, the integration of ideas and methods from film theory, users' experience approach and cognitive psychological approaches to emotions might provide a useful framework in which to address these questions.

At a more basic level, despite the explosion of audiovisual products and the success of the film industry, little is known about what elements of a film make it interesting and what features produce emotional experiences in the audience. Historically, producers and creators have based their studies about the topic on observations of previous successes and failures without empirical data to support their understanding of the film elements that lead to satisfactory experiences by the individuals (Bordwell, 1989). Films are difficult subjects for empirical study because they integrate complex elements and artistic media to convey meaning and emotions (Gross & Levenson, 1995). Different elements of a film, such as the length and the composition of the shots, the camera movements, the music, the script for particular scenes, the quality of the actors´ performances, and so on, contribute to the quality of the film in various ways (see section 2.5 on Cognitive Film Theory). Moreover, a film's success depends not only on the existence and the quality of individual elements in the movie (scriptwriters, actors, music, technicians, producers, etc.) but also on economic and historical factors that are difficult to predict (Dempster, 2006). For these reasons, the film industry is considered a high-risk investment since it is complex to foresee the audience reaction and the external elements that would lead to a film's success and high profits. The question of how to reduce the risk from external factors is an important issue for producers. However, only recently has empirical research been directed to understanding the cognitive and the emotional factors underlying film perception. Several approaches have recently been developed. Currently, a number of studies have examined the shot structure of films, the structure of scenes according to their meaning and/or content (Redfern, 2014), the function of narrative devices (cuts and placements of objects in the scene; Bordwell, Thompson, & Ashton, 1997), and how the perceptual system creates impressions of continuity, disruption, or motion (Bordwell, 1989; Bordwell et al., 1997). Similarly, some phenomenological and cognitive approaches that we will discuss later (see sections 2.3 on Emotion and communication and 2.5 on Cognitive film theory) have focused on studying emotional engagement (Marks, 2000, Sobchack, 1990), empathy, and other emotional reactions to films (Smith, 1995, Plantinga, 1999; Grodal, 2009). However, the field is short of empirical methods and studies to assess how different film elements emotionally impact the audience, and few empirical studies have focused on the films' cognitive and emotional contents and on how they have an affective impact on the audience (Silvia & Berg, 2011; Tarvainen, Sjoberg, Westman, Laaksonen, & Oittinen, 2014).

These studies are important for industries intending to use and pay for videos to achieve their purposes, as well as for the film industry at global and national levels. For example, it is common knowledge that US films dominate

the market shares in both the European Union (EU) and Finland (in 2015, US films represented 64% of the market share in the EU; Kanzler, 2016), and of the top 20 movies in Finland, only eight were Finnish (The Finnish Film Foundation, 2016). What are the reasons for the low level of success of Finnish films and European movies in general? Cultural and language diversity have been presented as reasons for the underachievement of EU films, but if this so, why do US films thrive in European markets (Bondebjerg, Redvall, & Higson, 2015)?

As mentioned, very little is known about what features make films interesting and attract a large audience. Some international studies suggest that the same films can be received differently, depending on the audiences' social and cultural differences (Katz & Liebes, 1990). Audience reception studies (Hall, 1980; Morley, 2006; Tomlinson 1999) emphasize that reactions to communication products could not be predicted from knowledge of the text or audiovisual material alone, since their message and form is not passively accepted by the audience, but the reader / viewer interprets their meaning based on their cultural background. This view has been extended not only to traditional local media, but also to more globalised internet platforms that are distributed across different cultures (Livingstone, & Das, 2013). These two points drive the studies in this dissertation: What makes a film interesting and thus impact its success? To what extent do social and cultural factors influence a film's emotional impact on the audience?

1.2 Objectives

The overall aim of the work presented in this dissertation is to understand the video elements that impact the audience. As we will discuss later, a basic claim in our approach is that viewers' experiences are based on the mental representations that they extract from the audiovisual presentations. From this view based on appraisal theory (see section 2.3), we are interested in identifying the mental representation of the video contents in the viewers' minds, what sequences and scenes arouse their interest and provoke emotional experiences, and if these differ depending on cultural factors and orientations. Because video products have both industrial and entertainment purposes, we have focused our questions on these two contextual settings. Hence, our empirical studies are targeted to makers of audiovisual contents in both industrial and entertainment contexts. We would like to provide with methods that can be used to extract people experiences of audiovisual contents that can be adapted to the different contexts in which audiovisual contents are used. The following statements provide detailed descriptions of the objectives of our empirical studies:

Objective 1. Study and identify the cognitive and the emotional dimensions introduced in the viewers´ experience when products are introduced by the videos' contents rather than when static images are presented. We aim

to understand the changes in how the product is represented in memory and consciously perceived through video and image presentations.

Objective 2. Explore the emotional experiences from videos in commercial settings. We aim to identify the videos' elements that impact the audience's emotional experiences.

Objective 3. Study the cultural differences in the videos' functions in the industries and in the viewers´ experiences.

Objective 4. Focus on identifying the video contents and the factors that catch the interest of the viewers in different cultural contexts when watching a film.

Objective 5. Build on the results of previous studies in order to elaborate on new methods to measure the experiences about audiovisual contents across cultures.

Information and communication technology can be viewed as a dynamic conceptualization of sociocultural interaction. With such nature, it requires communication skills, self-oriented learning, functionality, usability, and particularly, facilities for meta-knowledge allocation to be built in software, groupware, and other forms that facilitate communication and are used by end users from many cultures. Inevitably, these concepts should be combined with subject knowledge from other relevant areas and disciplines, such as cognitive science, social science, psychology, film theory, cultural anthropology, and philosophy, to name a few (Koskinen, Berki, Liimatainen, & Jakala, 2005). The present dissertation is an attempt to combine these fields in the study of emotional experiences about audiovisual contents across cultures (Finland and Spain) and contexts (commercial industries and feature length films).

In the following pages, we combine discussions coming from different fields into sections organized around the main topics of the thesis. First, because our main approach is based on the users' experience, we include a section in which we discuss the idea of usability and we relate usability to aesthetics. Our argument here is that in films and in other audiovisual products, aesthetic appreciation is part of the product "usability", and therefore we discussed the different ways in which these two concepts are related. Similarly, emotional experiences constitute the very basic building blocks of the users' experience approach, (also when applied to films and other audiovisual products), and hence, in the next section (section 2.2), we discuss classical theories of emotion and how from these theories, different classifications of emotions have emerged. Interestingly, psychological theories and their relative emphasis on the role of bodily reactions and cognitive elements, parallel some of the discussion within film theory on how emotions relate to film elements with bodily reactions (emotional embodiment) or cognitive interpretations. This discussion is included on the section on emotion and human communication (section 2.2.2). Within this section we introduced the concepts of non-verbal communication and empathy. In this section, we conclude that these type of emotions involve cognitive processing and interpretation, and therefore in our next section (section 2.3), we discuss in depth the concept of appraisal and the different processes involved in

emotional processing from this theoretical perspective. In section 2.4, we introduced "interest" as a core cognitive emotion for films and other narrative products. This emotion involves curiosity, novelty, knowledge seeking, and other cognitive elements easy to analyze from appraisal theory. Both entertainment and industrial video contents intend to keep users' *interest,* and therefore we stress here the critical importance of identifying the elements of audio video contents that capture the audience and provoke the cognitive/emotional reaction that we call *interest*. Finally, we turn to cognitive film theory (section 2.5) and review the research within the film field that has been directed to theoretically identify some of the critical elements of film that produce cognitive and emotional reactions, and that may finally underlie the success of a video product.

As we mentioned, however, some theories and empirical studies suggest that the same film or video product can be received differently depending on the social and cultural background of the audience. Therefore, some of the discussed emotions (interest, empathy, aesthetic emotions) may depend on the cultural background of the audience. Therefore in section 3, we review some theories and studies relating Culture and Communication. We discuss theories that introduce cultural national dimensions since most of the film industry is national and introduce national elements; hence we think that differences in these dimensions might have an impact on the viewers' experience of audiovisual contents. However, this is an open discussion since there are arguments in favor and against the universality of certain emotions that we include as part of our arguments.

Finally, in section 4 we offer an overview of the empirical work that we present in the 6 articles included in this dissertation. The theoretical sections point to the importance of providing methods to capture the mental contents composing the viewers' experience and ways of identifying elements that raise interest and other emotional experiences in the viewers. Because the problem is complex and include both mental contents and perceptual elements, the methodological approach needs to be complex and rich, and therefore we advocate a mixed method approach and discuss the advantages and limitations of this approach. We illustrate the use of this approach with a summary of the main findings of the 6 empirical studies and follow this summary from discussion of some points that can be extracted for the empirical data, their limitation and their suggestions for future research.

With this, we intend to put forward arguments supporting the usefulness of the users' experience approach when studying audiovisual contents with different purposes and in different social and cultural context. We try to show that some of the discussion and theoretical concepts in film theory have a parallel within the users' experience field (applied to other product and industrial settings), and therefore some of the empirical methods can also being successfully applied to identify elements that can serve to predict the success of an audiovisual product. With this, we aim to provide useful tools for video and filmmakers in both industrial and entertainment context that might help to identify elements that can serve to design successful audiovisual contents.

2   USER EXPERIENCE AND APPRAISAL THEORY

2.1   Importance of user experience approach

The goal of any audiovisual product is to send a specific message to an audience by means of audiovisual information. Many creators, especially in the artistic area, have focused on how to generate good-quality audiovisual information. Classic film theorists such as Rudolf Arnheim, Béla Balázs or Siegfried Kracauer (see Stam, 2000 for a review) were mainly concerned with defining the crucial elements of the medium, whether they were valid to index reality and to what extent these elements differed from reality (Bazin, 1971), but they paid less attention to the target audience. Classically, professionals in the audiovisual field have been more interested in studying and developing products from the standpoint of the stimulus rather than from the viewers' perspective. However, if the audiovisual media purports to create a strong impact on viewers' minds and influence their thinking, it needs to understand their emotions, experiences, and the factors influencing these experiences. Therefore, the video industry should be aware of the end users' interesting characteristics that have not been taken into account and that need to come into focus (Lang & Edwodsen, 2010).

In the areas of technologies and technology design, it has long been understood that users have to be the center of the creation process. Product design begins by understanding the users' cognitive and emotional aspects (Garrett, 2011; Helfenstein, 2012; Norman, 2005). Today, the field of user design is a central topic in the domain of human–computer interaction (HCI) and technological design. User design is a model that seeks to satisfy the user's needs when interacting with artifacts by providing a good experience of this interaction without investing larger efforts. Norman (2005) categorizes the user's emotional experience into three levels. The first, called visceral level, produces the initial impact resulting from processing the information received by the user's senses. Second, the behavioral level refers to the user's reaction to the stimulus. Lastly, the reflective level corresponds to a more complex

cognitive process in which the receiver consciously makes an evaluation that determines his/her final experience. From the design perspective, this last level is central to achieving the desired impact on the user.

Usability is a key concept in the study of the user's experience of the product since the proper functioning and accessibility of technology mean that the user obtains the expected benefit without great effort on his/her part. Usability is usually measured by examining task performance and addressing questions such as "Could the user complete the task? How long did it take to complete it? What obstacles did the user encounter in carrying it out? Was it a pleasure to perform the task?" The last question illustrates that usability does not only include the artifact's functional aspects, but aesthetic features also play an important role. This is especially true when the artifact under consideration is an artistic product such as a film. Several studies show that a suitable aesthetic design of the product, that is, a design that pays attention not only to its functionality but also to aesthetic elements, improves the perception of usability and therefore the user's final experience. The importance of aesthetic design has been stressed by some studies showing that a poor decision regarding aesthetic aspects can lead to the opposite effect and not produce the desired experience. For example, in web design, it has been found that the use of striking colors to highlight a concrete aspect of the product or the information to be conveyed can distract the user and make it difficult to understand the message rather than facilitate understanding (Norman, 2005).

The concepts of *aesthetics and usability* were previously considered independent design dimensions in HCI. Aesthetics was sometimes identified as a non-quantifiable and subjective quality of objects, related to subjective sensori-emotional values and judgements of sentiment and taste (Zangwill, 2003), whereas usability was considered measurable by relatively objective means, with efficiency as its foremost criterion. Aesthetics is a difficult concept to define since it has many different aceptions that stress different dimensions. However, recent psychological research has tried to make aesthetics an objective and measurable dimension. Fairly recent studies (Lavie & Tractinsky, 2004; Tractinsky, Cokhavi, Kirschenbaum, & Sharfi, 2006) have been directed to construct scales to measure aesthetics and capture its underlying dimensional structure. For example, in web design, Lavie and Tractinsky (2004) have extracted a two-dimensional structure of the perceived aesthetics. The first dimension is represented by features including pleasant, clean, clear, and symmetrical (classical notions of aesthetics), whereas the second dimension corresponds to the web's characteristics such as creative, original, sophisticated, and fascinating, related to what they call "expressive aesthetics." Other studies (Kurosu & Kashimura, 1995; Tractinsky et al., 2006) have also shown a high correlation between usability and aesthetics. In their study, Kurosu and Kashimura (1995) had participants' rate screen layout patterns (tested in two ATMs) on dimensions that were traditionally believed to enhance usability and on those related to the perceived beauty of the interface, finding a high correlation. On the other hand, Tractinsky and colleagues (2006) show that the

aesthetics and the usability dimensions in the context of web design are correlated, and this correlation is even higher when the expressive dimension is considered. Therefore, aesthetics seems to influence the perception of technological products' usability.

To understand aesthetics' role in a product's perceived usability, Hassenzahl (2004, 2010) suggests that two additional constructs from the field of HCI are of interest—*perceived pragmatic quality* (PQ, similar to perceived usability and ease of use) and *perceived hedonic quality* (related to perceived enjoyment, novelty, and stimulation). According to this author, aesthetics plays a role in evaluating these two properties of artifacts but in two different ways. Globally, people assess a product's qualities by making inferences based on the information available at the moment. For example, people sometimes judge the worth of a product based on its price. Similarly, people can evaluate the quality of a product based on its attractiveness. This attractiveness will create a global impression of goodness that will in turn influence the perceived PQ of the product. Hence, the influence of aesthetics on PQ is indirect since it is the impression of global goodness that influences perceived PQ. Research on social psychology (Nisbett & Wilson, 1977) has provided evidence that humans tend to assume that good-looking people also have other positive qualities. This "halo effect" also affects products and objects, so that products perceived as attractive are also considered stimulating and enjoyable (van Schaik, Hassenzahl, & Ling, 2012). Generally, the results on the relation between usability and aesthetics show that judgements of beauty or enjoyment are positively correlated with general goodness (Dion, Berscheid, & Walster, 1972). More importantly, the effect of beauty on hedonic quality is direct, whereas the effect of beauty on PQ is indirect, mediated by goodness.
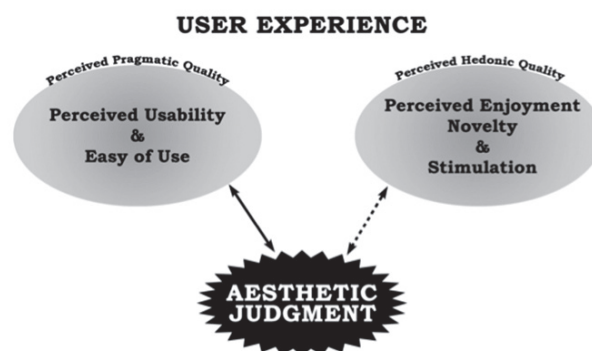
FIGURE 1   Relation between perceived usability and perceived enjoyment in aesthetic judgments

Recent research (Tuch, Roth, Hornbæk, Opwis, & Bargas-Avila, 2012) has shown that the relation can also be reversed so that usability also changes the aesthetic perception about the product. Since more data on the relation between

aesthetics and usability are correlational, bidirectional relations are also possible. In their experimental study, Tuch and colleagues (2012) manipulated interface-aesthetics and interface-usability in the context of an online shop. The participants had to find specific items in the online shop and rate their perceived aesthetics and usability of the shop after performing the task. The results indicated that whereas aesthetics did not affect perceived usability, usability influenced perceived aesthetics. Tuch and colleagues interpreted the reversal of the effect as suggesting that the experimental conditions might reverse the relation. For example, in their study, the differences in usability were more salient than those in aesthetics; similarly, their participants had time to interact with the products. This study's important point is that the environmental conditions and the task goals and conditions might change the relation between aesthetics and usability dimensions so that under some conditions, the user's affective experience with the usability might serve as a mediator variable in the aesthetics–usability relation.

Another important question regarding aesthetics is whether the product appearance is also related to actual performance. Sonderegger and colleagues (Sonderegger & Sauer, 2010; Sonderegger, Zbinden, Uebelbacher, & Sauer, 2012) explored the relation between aesthetics and objective measures of performance in usability tests regarding effectiveness, efficiency, and satisfaction when adolescents achieved specific tasks with a prototype mobile phone. They interacted with two functionally identical mobile phones that only varied in visual appearance (attractive versus unattractive). Measures of actual performance, perceived usability, and perceived attractiveness were taken. The last two measures were taken before and after the participants' interaction with the phones to determine the effect of their experience with the products. The findings showed that the attractive mobile's perceived usability was higher even though objectively, both phones were equally usable since their features were identical. Additionally, the actual measure of performance showed more efficient use for the more attractive phone, suggesting that beauty actually affected performance. However, the relationships among attractiveness, usability, and performance seemed to be more complex. For example, the participants might take a shorter or a longer time to perform tasks on the mobile phone, depending on whether the context was for leisure or for work. In the leisure context, Sauer and Sonderegger (2009) found longer usage times for more attractive phones. Their explanation of these results was that the work context induced the motivation to perform efficiently, whereas the leisure context might produce the desire to make a joyful experience longer, which would more likely be observed in such a context. More recent research has shown that many other variables, such as the duration of exposure to the product and the presence of multiple sessions, may also modulate the relationships among performance, usability, and aesthetics (Sonderegger et al., 2012).

In the case of audiovisual products, the *user experience* or the *viewers' approach* can also be used (Knudsen, 2002; Moggridge, 2010). The viewers'

approach can be applied to the devices used to display the audiovisual product and the quality of the image (Dobrian et al., 2011); it can also be employed in narrative structures, as well as technical and aesthetic aspects, also called the audiovisual language. In the first case, the measures of usability have been directed to assess the viewers' experiences with the devices used as channels of diffusion of these products and their suitability to the characteristics of such products. For example, the necessary size of a screen to watch a short humorous sketch or an advertisement will not be the same as that required to have a full experience of the latest Hollywood blockbuster, and these physical features of the devices can have an impact on the viewers' experiences and engagement with the video contents. On the other hand, the audiovisual experiences will be marked by the emotional impact that the product's concrete elements provoke in the audience. Hence, this viewers' approach should also be directed to study the relation between textual elements of the video product and the way they are experienced by the viewer.

Within communication research, the pioneering studies addressing the media impact on opinions and attitudes of people were undertaken by Mass Communication researchers during the 20th century who started to study the use of the propaganda machines of governments to manipulate the collective attitude on a certain topic or political movement inside a society (Laswell, 1927). These studies were conducted especially during World War II, when Americans, British, Germans, and Soviets put into pratice the use of films to satirize and demonize their adversaries and to convince the masses to support their armies and national military movements (Hovland, Janis, & Kelly, 1953). An important finding of this pionering studies, that we will also discuss in other contexts is that the effect of propaganda messages were highly dependent on the individual background of the receptors (Lazarsfeld, Beterlson, & Caudet, 1948), but the main conclusion was that images and videos might have a strong influence on the audience's perception of reality (Herman & Chomsky, 1988), and they can be used as effective tools to change people opinions.

In a more academic context, audience reception studies (Hall, 1980; Tomlinson 1999) have stressed the audience's central role in communication. In her essay "Shaping belief: The role of the audience in visual communication", Tayler (1992), argue that all communication is directed toward a specific audience, and the designer of communication products needs to consider the audience as an active part of the design process. The audiovisual designer has to identify the beliefs that the intended audience shares and the right references that would persuade the audience about the credibility of an audiovisual message or the narrative sequence of a feature length film. Audience analyses within this approach are usually performed through the use of surveys, focus groups with small reprentative samples of the target population, or in-depth ethnographic observations of a given audience where viewing habits are observed form the inside over a substantial period of time. Audience analyses have tried to isolate demographic factors (geographic location, race, education, gender , etc.) to explore the ways in which different groups understand and are

influenced by the same message. From this perspective, the audience's system of beliefs plays a central role in the design of the audiovisual product.

Following this idea, recent research on the media audience has clearly stressed the need to understand the behaviors of the audience. In her interesting recent book, Atkinson (2014) offers a rich analysis of how technology is changing the relationship between the moving image and the audience to make it much more interactive. These changes are reshaping the meaning of cinema by shifting the focus from the form to the audience, where the audience members are no longer represented by numbers and profits but by their individual experiences as viewers. Within this framework, the important point is to analyze the audience's relationships with technology and films, as well as to understand the viewers in terms of their emotional experiences (Livingstone, & Das, 2013). From this, audience reception studies in communication are close to the approach of users' experience design in the HCI and products' design field. Users' analyses performed with users' design methods can be done to identify the elements of audiovisual products that influence the viewers in the desired way.

Because emotions are key to understanding viewer-centered design, in the next section, I revise the main theories of emotion and define my approach to the study of emotional experiences.

2.2 Theories of Emotion

2.2.1 Emotions and types of emotions

To gain a better understanding of users' experiences, we must first comprehend what emotions are, how they are generated, and their implications for the development of our mental processes. The concept of emotion has been with us since ancient times, although the word itself dates back to 1579 when French thinkers started using the term *emouvoir*, meaning *stir it up* (Merriam-Webster, 2014).

However, the cognitive sciences neglected the study of emotions for a long time (Thagard, 2005); following Plato's thought, emotions were considered just impediments to rational thought. Thus, the traditional view of cognitive science was that decisions could be made rationally or emotionally, but these were two independent dimensions of human reasoning processes. However, today, this view has changed, and emotions are considered inherent parts of rational decisions. Part of this change has been due to the work of Nico Frijda, one of the pioneers in studying emotions as belonging to an adaptive decision system. He defines emotions as *tendency action*, that is, the tendency to adopt ways of behaviors based on an individual's needs (Frijda, 1988, 2007), and embraces the appraisal theories that are discussed later in this dissertation.

Classical-biological theories of emotion are based on Darwin's pioneering work (Darwin, Prodger, & Ekman, 1998). A biologist's approximation of

emotions implies the existence of a half-dozen primary emotions; the number differs from a minimum of four to a maximum of ten, depending on the specific theory. These basic emotions depend on the biological pathways used and are based on biological factors, such as neurotransmitter pathways, developmental history, patterns of neuronal firing, cross-cultural facial expressions, patterns of facial feedback, and adaptive functions in a psycho-evolutionary analysis (Reeve, 1993). Perhaps the more classic classification of emotions is the following one proposed by Ekman and Friesen (1971):

- *Joy* is a positive feeling from a sense of satisfaction and triumph. It is an inherently positive emotion, which makes life more enjoyable. Joy brings out people's willingness to participate in social activities. According to Ekman, it is hard to find a stimulus as powerful and rewarding as a human smile.
- *Anger* is perhaps the most passionate and powerful emotion. It is triggered as a response to a perceived provocation, hurt, or threat; a person who faces a physical or a psychological threat needs to control it. It can be a very positive or a very negative emotion because it translates into a desire to overthrow the barrier of control in the environment. It can be highly energizing and productive or dangerous and difficult to control.
- *Fear* is activated by the perception of physical or psychological harm or danger. When fear is activated, avoidance responses take place, leading a person to seek protection or to flee. If flight is not possible or is not desired by the individual, fear can be a motivation to face the danger. In this case, the emotion of fear can be positive and lead to positive actions.
- *Disgust* is an emotion that involves a rejection of an unpleasant object or event. This rejection causes the individual to remove from his/her life or environment anything that will lead to the unpleasant stimulus. It can also be a case of affecting certain habits in the event that this emotion is produced by factors/objects related to the habit.
- *Surprise* is a short-lived fast emotion. It might be triggered by a large variety of unexpected or sudden stimuli (i.e., suddenly remembering something a person has forgotten). Surprise prepares an individual to face the event that has triggered the emotion, and it is followed by a brief period of high cognitive activity.
- *Sadness* may be regarded as the most adverse and negative emotion despite its positive elements. It is generally activated when the stimulus of loss or failure appears. This emotion pushes the individual to fight the elements that have provoked it, but often, no action is possible (e.g., the death of a loved one). It can still be considered an element of social cohesion as it prompts people to be more united by the fear that the loss generated.

Ekman (1992) believes that emotions are universal and have an evolutionary basis. His work has focused on understanding and identifying emotions in facial expressions since in his view, people find more nonverbal than verbal language when analyzing human interactions. The human face provides a clear indication of the emotions experienced by a subject and is key to communication among people (Ekman & Friesen, 1971). His work on human facial expressions has also evolved in the field of micro expressions and how to detect whether a person is lying by observing his/her facial expressions. In 2001, Ekman and John Cleese (Monty Python) created a four-episode documentary called *The Human Face* (Erskine & Stewart, 2001), which reflects this translation of emotions in human communication.

The idea that emotions are discrete entities and can be classified has not only been proposed by Ekman; other proposals (Izard, 1977, 2007) have extended the number of basic emotions (see Table 1). Nonetheless, the basic notion of these theories is that several discrete emotions can be identified and measured and are basic because they have biological grounds and an adaptive function.

TABLE 1   Basic emotions according to Ekman, Izard, Oatley, and Fridja

Basic emotions			
Ekman	Frijda	Izard	Oatley
Anger	Desire	Anger	Anger
Disgust	Happiness	Contempt	Disgust
Fear	Interest	Disgust	Anxiety
Joy	Surprise	Distress	Happiness
Sadness	Wonder	Fear	Sadness
Surprise	Sorrow	Guilt	
		Interest	
		Joy	
		Shame	
		Surprise	

Despite Ekman's influential work (1992), his theory of basic universal emotions has been widely contested. First, some theories question the discrete nature of his emotional classifications and propose that human emotions should be defined in terms of their positions in several dimensions. Although different theories vary in the number of dimensions, most of them include valence (positive or negative), arousal (degree of activation), and intensity. The more important difference from Ekman's basic emotions is that a single neurophysiological system of interconnected neural locations is assumed to underlie all emotions, in contrast to the proposal that different neural systems underlie various emotions (Russell, 1994). However, the most common criticism of Ekman's emotional theory is based on its biologically universal nature. The

opponents of this biological simplification of emotions propose a cognitive perspective that includes a much wider range of human emotions. Although these positions do not deny the biological bases of emotions, they consider that emotions are also dependent on the cognitive interpretation of these biological stimuli and that this interpretation can be diverse.

In his influential theory of emotions, Russell (1994) introduces the idea of a neuropsychological state that he calls *core affect*, comprising the two basic dimensions of pleasure–displeasure (valence) and activation–deactivation (arousal). Core affect is thus a mental state, an easily accessible and nonreflective feeling that contains a mixture of hedonic (pleasure) and arousal values. Figure 2 represents the differences among the core affects— happy, angry, sad, and calm—depending on the position in this two-dimensional space. Happy and angry are both characterized by high levels of arousal but differ in their valence dimension. According to this proposal, an emotion can be located at any point of this space, differing in intensity and the degree of pleasure-displeasure.
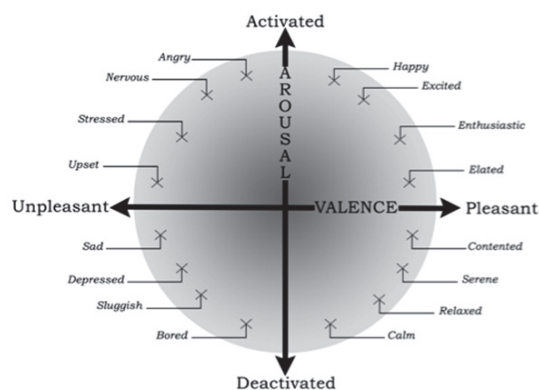
FIGURE 2   Representation of core affect as a mixture of hedonic (pleasure) and arousal
            values (adapted from Russell 1980)

People feel these core affects continuously without being fully aware of them or paying attention, but Russell (1994) introduces the idea that emotions are usually directed and have intentionality. For example, love induces a high arousal–pleasant core affect, but love is specifically directed toward a person. It is the perception of this intentional quality that makes us conscious of being in love. Hence, love is not a core affect but the perceived quality of the core affect when it is consciously interpreted as being directed to a person. Hence, for Russell, emotional experiences are composed of core affects and perceived quality; while the first is biologically grounded, the second has a cognitive dimension that explains emotional mental states.

These arguments lead some scholars to conclude that a large variety of emotions can be identified in humans. According to Frijda, "Emotions arise in response to the meaning structures of certain situations, different emotions arise in response to the different structures of meaning" (1988, pg. 349). Lazarus and Folkman (1984) are the firsts to introduce the concept of appraisal. They propose that people unconsciously assess the consequences of the events happening around them, but only when they interpret the meanings of these phenomena do they experience emotions. Thus, the rational assessment of a situation occurs prior to the emotional experience; therefore, such rational interpretation (appraisal) is also an element of survival (Lazarus & Folkman, 1984).

Biological and interpretive positions about the nature of emotions have been present and discussed in cognitive science for a long time. A theoretical position assumes that emotions should be understood as judgments about a person's general state, while another theoretical position gives much more weight to the reactions of the body (Thagard, 2005).

Keith Oatley (1987) is the leading proponent of the first theory. According to him, the resolution of human problems is complex as it involves multiple conflicting goals, rapidly changing environments, and rich and varied social interactions. Emotions provide an appraisal summary of the situations in which the problems have to be solved and contribute to create focus and action (Oatley, 1987).

The second viewpoint emphasizes bodily reactions and a more physiological approach. Emotions involve brain reactions to the physiological body changes instead of creating judgments about the overall situation. The emotions are generated through "somatic markers"; the body sends signals to the brain (Damasio, 1999).

In between these two positions, some theories propose that emotions depend on body signals and "cognitive appraisal" (Frijda, 2013; Morrisj, 2002). One of the first proponents of this physiological–cognitive theory of emotions is Schachter (1964), who argues that the interaction between physiological arousal and the cognitive appraisal of the situation is what provokes a particular emotional state. Physiological arousal depends on two key factors in the stimulus generator of emotions—arousal and pleasure. Through these two indicators of pleasantness and intensity, the range of emotions can be identified. According to these proposals, different emotions can be distinguished with respect to two main dimensions—pleasure and arousal. However, these dimensions must also be correlated with the assessment (appraisal) of the cognitive situation, requesting emotions. An emotion is a pattern of activation in a population of neurons with connections to both sensory and inferential brain areas (Thagard, 2005).

Extending these more cognitive approaches, emotions are also involved in the representation of objects and events. For example, in his review of some experiments on the automatic activation of emotional concepts, Fazio (2001) shows that negative and positive emotional evaluations are well tied to the

representations of concepts and objects. These emotional associations are also linked to propositions, analogies, and images. Apart from constituting a decisive factor in how we represent the world around us, emotions are also essential tools for how we interact with the world and other people. The mental structures of emotions seem to provide an efficient way to guide actions as well (Thagard, 2005).

2.2.2   Human communication and emotions

Interestingly, some of the discussions regarding emotions in psychological research are also apparent in theories of emotions in audiovisual communication and film studies. The discussion regarding the relative role of bodily reactions and cognitive elements in emotional processing in films and other audiovisual products is very present (Grodal, 1999). Thus in his book, Embodied Visions: Evolution, Emotion, Culture, and Film, Grodal adopts an embodied theory of emotion in films based on Darwinian ideas. His position close to Damasio's psychological ideas is based on understanding films as the processes and architecture of the embodied brain. In one of his latest publications Grodal (2017, p. 4) argues *"The brain mechanisms by which we enjoy such an embodied interaction with the world is inherited from our animal and hunter-gatherer-ancestors and this explains the strong fascination with such types of narrative even if most people in the modern world seldom has an existential need for HTTOFF-scenarios. The daily life of animals may also be a mise-en-scene of such scenarios that represent fundamental ways of interacting with other agents in the physical world and mammals are provided with the ability to play"*.

Although from a very different methodological and theoretical position, phenomenological film theorists such as Laura Marks in her essay *The Skin of the Film* (Marks, 2000), *or* Vivian Sobchack in her conception of the 'lived body' (Sobchack, 2000) make the argument that film experiences involved shared affective experience between the characters, the spectator, and the sensory text of the film. These experiences often result in the 'vivid' sensations of corporeal feelings for the spectator. This embodied concept of emotions contrast with the positions of cognitive film theorists that emphasise the cognitive processes behind emotional processing. Thus, cognitive film theories as Bordwell assume that the viewers engage in goal-directed non-conscious processes such as inferencing, hypothesis, etc., to make sense of the film narrative and its emotions. Although an in depth analysis of the position of embodied and cognitve approaches to emotion film theory is out of the reach of this dissertation, in these lines, we wanted to stress the parallel between some of the discussions in psychology, cognitive science and film theory. Similar, to theories in psychology and cognitive science, most recent phenomenological and cognitive theorists assume that emotional experiences are composed of bodily reactions (affect) and cognitive processing and interpretation of these reactions. Because this is common to widely used concept of appraisal, and this is central for the users' design approach in this dissertation, we will develop appraisal theory in the next section.

In the last paragraph, we discussed that for some theoretical positions, personal body reactions are the building blocks of emotional experiences, however, our body do not only signal our own reactions, but also provide cues to interpret the emotional reactions of others. Obviously, in real life, communicating emotions is not only achieved by exchanging verbal or audiovisual structured messages, but also the human body plays a role in feeling emotions and communicating them. We have bodily reactions to emotions; we recognize and adopt facial expression, locate our body in different locations, postures and perform gestures that constitute communicative events (Argyle, 1975). In the *field of human communication and emotions,* this body language has been the object of reaserch. For example, Hall (1990) points out the importance of distance between individuals when they interact and the emotions that lead to zooming in or out of the person who is speaking. Borg's (2009) have shown that we can significantly influence the emotions of others and persuade them by effectively using the silent communication of body language. According Borg (2009), 93% of human communication depends on body language.

The role of facial expressions, gestures and other forms of non-verbal communication in conveying meaning and emotions plays in interpersonal relations and social communication has been widely discussed in psychological research (see Krauss, Chen & Chawla, 1992 for a review), but here we want to call attention to the fact that non-verbal communication is very often used in films, advertisements, series and all type of audiovisual products as tools to convey meaning and emotions within the audiovisual product. Therefore, it is important to question how the audience interprets the body emotional cues when observed in a video or film. Some theorists (Pease & Pease, 2004; Walton, 1984) suggest that we can unfold the meaning of body expressions present in films and media by normal observation, under the assumption that audiovisual contents are transparent (Transparency hypothesis). Transparency in this context means that observations and interpretations of facial expressions and gestures in media are similar to the observation and interpretation of body language in real life. However, this position is not well accepted by many film theorist with the argument that any kind of visual representation shapes the image, and in consequence, the body expression represented by the image should differ (Currie, 1999). The idea is that the technology used in films and audiovisual products some times constraints the way of acting. For example, actors in shot-reverse-shot are often prevented from gestures and movements since they need to be closer than in real life (Naremore, 1988). In an even more extreme position, the phenomenologist film theorist Sobchack (1992) considers that the film is an object-subject that sees and is seen. Metaphorically it can be considered that the camera and the technological elements that capture the reality constitute the "body of the film" and it is this film body that subjectively captures the world. When we see the film, we are subjectively experiencing the subjective view of the film. From this "embodied" theory, body gestures cannot directly be observed from the film since our observation is subjectively

mediated by the film view. Thus, a fully transparent presentation of bodily expression in visual media is not possible. In addition, although most bodily expressions have communicative intentions, people in real communication are not usally aware of them, while bodily expressionas are purposely enacted with clear communicatve intentions in films, series and most audivisual products (Hansen, 2014). Hence interpretations of facial expression and acting have become an important topic in audiovisual communication studies in general and in film in particular.

The concepts of interpersonal intelligence and emotional intelligence proposed by Gardner (1983) and Goleman (1996), respectively are interesting in this context. Goleman (1996) argues that the neocortex (the rational part of the brain) allows people not only to become aware of their emotions, but also to understand the feelings of others, and adopt an empathetic and social attitude to understand others' behaviour. Empathy, as the ability to to take the role of others and understand their behavior, is of special importance for human communication. Films, TV series, advertisements, and other narrative audiovisual artifacts seem to provoke in the audience the feelings and the experiences of the characters in their narratives. A film is experienced as good when the spectators take the role of the characters and feel and mentally enact their experiences and emotions. For this, empathy is central. Similar to many complex emotions, empathy is assumed to have cognitive and affective components. The cognitive component involves taking a person's perspective to understand his/her feelings (Baron-Cohen, 1997), which implies making inferences about the other person's mental and affective states, including thought, beliefs, motivations, and so on. The affective component entails being in an emotional state that is similar to that of the character that the person is observing or interacting with. Some scholars propose that this component is similar to resonating with the bodily states of the observed person and is related to the functioning of mirror neurons (Gallese, 2001). In media communication, Zillman (1996) applies the notion of empathy to narrative plots in series and TV programs. According to his theory, empathy starts by observing the characters and evaluating the morality of their actions, which lead to an affective disposition in favor of or against the characters. A positive affective disposition results in a person's concern about the wellbeing of the characters, sympathy for them, and taking their perspectives and roles. In the case of a negative evaluation, refusal and condemnation follow, along with a sense of counter-empathy. This empathetic or counter-empathetic feeling creates hope in the spectator that the continuation of the narrative will lead to an end where the positively assessed character wins over the negatively evaluated one, as well as fear that this might not be so. Empathetic emotions are then important elements of communication as people differ in such feelings, and empathy can be created by different elements.

In fact, as we will discus in section 2.5, empathy and emotional engagement has been a central subject of research for cognitive film theorists. However, in film theory there have been al least two ways of understanding the

term empathy, first as the ways in which the spectator understands the character and the situation in which the character is in (Tan 1996), and second, the extent to which the spectator has a matching feeling with the character (Grodal 1999; Plantinga 1999; Smith 1995). The first, often termed central imagining, is cognitive in nature, and involves imagining how it would be to stand in the character situation or in his/her state. The second type is a more automatic kind of involvement in the character feelings or states by mirroring the bodily reactions (e.g. facial, expressions, somatic reactions, etc) engagement. As we discussed in the section on cognitive film theory, part of the studies in this area have been directed to find the film elements that contribute to these empathic emotions.

Although this is not an emotion that we will explore in our studies, the way empathy is induced, it is something to consider in audiovisual communication studies and it is similar to other emotions that we will explore in our empirical studies in involving both mental contents and proceses as well as bodily reactions and as such some of the methods in our studies could also be applied to its study. Our point is that viewers can be understood as users and that their emotional experiences should be taken into account when designing audiovisual products or trying to predict the success of an artistic film. In the empirical work presented in this dissertation, our aim is to take this position and study viewers' emotional experiences with industrial videos and feature length films. We intend to capture and understand the video products' elements that make them interesting to the audience.

From this perspective, two concepts are of special importance—1) appraisal as the process that may give rise to emotions and 2) interest as a complex emotion that results from the appraisal of novelty. Because these two concepts are central for this dissertation, they are discussed in the following sections.

2.3 Appraisal

As we mentioned in our discussion of the emotions, many reserachers assume that only when people interpret the meaning of the things occurring around them and of their bodily reations is when they experience emotions. From this, the rational evaluation of an event occurs prior to the emotional experience; this rational interpretation has been termed appraisal (Lazarus & Folkman, 1984, see section 2.2.1 for other references). The concept of appraisal has been extensively applied to user's designs, but as we will show, it can also be applied to audiovisual design.

When researchers and designers discuss about users' experiences, they mean the conscious part of mental representations, that is, symbolic representations of reality and non-existing things in the mind (Newel & Simon, 1972). Emotions play an important part in the process of creating mental contents. According to Arnold (1960, p. 182), emotions involve "a felt tendency

toward anything appraised as good, and away from anything appraised as bad." This appraisal process comes from three different information sources: the perceptual stimuli, the associative process in memory, and conscious reasoning processes (Roseman & Smith, 2001). These three processes proceed sequentially so that appraisal starts from the sensory and the perceptual processing of the stimuli whose aspects are detected and perceived by our senses. Information is then recovered from memory through fast and automatic associative processes, from the representation of the stimuli to the memory contents that start providing meaning to the events. Finally, the conscious reasoning process, usually linguistically mediated, encodes the meaning and provides the bases of cognitive and emotional experiences that will endure in time and might influence behavior (Saariluoma & Jokinen, 2014). In this sense, appraisal processes define the cognitive aspect, which produces a specific emotional state. The result of the appraisal process determines whether an individual consciously likes or dislikes the stimuli.
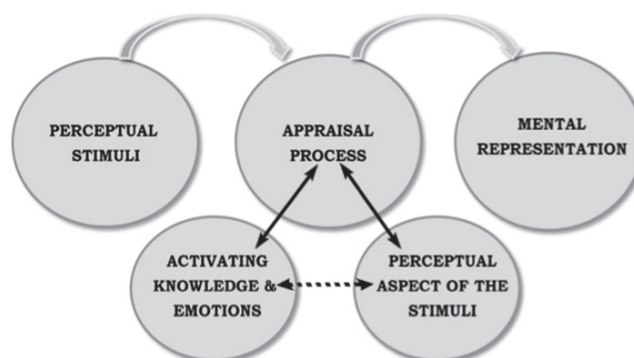
FIGURE 3   Appraisal processes integrating perceptual information and activated knowledge

From the perspective of emotional processing and classification, appraisal theories stress that because appraisal depends on the context and the situation, the range of emotions is broad and difficult to classify. Proponents of appraisal theories consider it possible to specify the combinations of appraisals that correspond to the emotions in basic emotion theories, but they do not think that these particular combinations account for all emotional experiences. Moreover, because it involves a process that proceeds in time, emotions are not composed of static elements but dynamically change over time (Ellsworth, 2013). Why, then, do people usually think in terms of discrete emotions? Ellsworth proposes that this tendency to think in discrete emotional categories greatly depends on language. Emotional experience resulting from appraisal is usually mediated by language. The availability of a word to name a specific emotional state increases people's awareness of the emotion and provides a conceptual clarity that reduces the ambiguity of some emotional states (Scherer, 1994). According to

Ellsworth (2013), three basic assumptions define appraisal theories. First, appraisal is a continuous process with many possible combinations of emotional states. Second, a person can have an emotional experience that does not correspond to any of the emotional categories proposed by classic theories, or there is not even a specific linguistic term to name the emotion. Finally, emotional experiences are not considered static states but dynamic processes that change in the appraisals of the environment, the physiological states, and the action tendencies as these components also change in time.

An appraisal theory can also be applied to emotional states coming from audiovisual stimuli. Experiencing an audiovisual product involves creating a mental representation of the cognitive and the emotional contents associated with the product. It means that people have representations of the actions and the environment depicted in the product that combine with their own internal mental states. Videos might be useful tools to induce emotions and change consumers' perception of an object. The mental representations of a product can be influenced by the emotions attached to the audiovisual contents where the product is inserted (Moran, 1981). By exposing an individual to a video-based content about a product, external emotions will be created in consciousness. The information will be presented with sensitive additions that are implicit in the image and the sound, leading to a posterior appraisal when the viewer faces the product (Wang & Cheong, 2006).

Videos and other forms of audiovisual presentations could provide contexts that may influence appraisal processes by providing associations with the presented information and influencing the apperception of the product, in turn changing the viewer's emotional experience (Moggridge, 2010). Thus, the user experience includes thoughts, perceptions, or feelings when using a certain product, and the way that the product is presented may increase or decrease the quality of the experience (Tullis & Albert, 2013). Taking this approach might be critical for increasing the video's effectiveness in facilitating knowledge about the product and the customers' intention to buy it and other possible products from the same brand. Similarly, the impact of and interest in a film may be facilitated by understanding the factors affecting the audience's emotional and cognitive experiences of the film. Designing video advertisements, industrial videos, or feature length films should start from understanding the different elements' influence on the users' cognitive and emotional aspects (Garrett, 2011; Helfenstein, 2012; Norman, 2005).

An influential idea in audiovisual research involving emotions is that the first appraisal element leading to an emotional experience or change is the perception of novelty (Ellsworth, 2013). A person's mind may wander while performing an activity, but if something changes in the environment and the person notices it, a number of physiological and psychological changes increased heart rate, motor responses to action tendencies, memory retrieval of related events, and so on) occur that in many cases lead to suspending the ongoing action and attending to the changed environment. According to Ellsworth, some authors consider these changes toward novel stimuli as

readiness for and the beginning of emotions (Kagan, 1990), but in his view, this state of readiness is by itself an emotional experience. As discussed in the next section, novelty is usually employed by video creators and filmmakers to provoke emotional states and is the basis of interest as a complex emotion.

2.4 Interest as a complex appraisal-based emotion

As mentioned in the previous section, the study of emotions and emotional experiences in the arts focuses on aesthetics. One of the core emotions in aesthetics is *interest* (Berlyne, 1974). However, traditional emotion theories have not paid much attention to it (Ekman, 1992; Oatley & Johnson-Laird, 1996) or have considered it a valence reaction related to attention (Ortony, Clore, & Foss, 1987) and opposite to distraction (Ortony & Turner, 1990). More cognitively oriented researchers have related *interest* to the tendency to acquire knowledge or certainty (Frijda, 1986). Other researchers have identified interest as part of the family of epistemology-based emotions (Ellsworth & Scherer, 2003; Rozin & Cohen, 2003) and an emotion associated with curiosity, exploration, and information seeking (Fredrickson, 1998; Izard, Ackerman, Schoff, & Fine, 2000; Tomkins, 1962).

In an interesting point of view, Berlyne (1960) proposes that curiosity is a strategic emotion that helps manage low levels of arousal. Stimuli with high levels of complexity, novelty, and uncertainty increase arousal. Hence, curiosity (looking for novelty and complexity) helps people increase their level of arousal. As previously mentioned, novelty is also considered one of the first appraisals in the process of experiencing an emotion (Ellsworth, 2013). Appraisal theories have adopted this idea to propose that interest involves the following: 1) appraisal of the degree to which an idea or event is complicated, unexpected, and hard to process, 2) assessment of whether it is possible to cope with the difficulty, and 3) evaluation of the gain obtained from spending resources in understanding (Silvia & Berg, 2011; Tan, 1996). This complex emotion involves appraising the novelty and the complexity of the aesthetic product (e.g., film), on one hand, and appraising the individual's capacity and resources to cope with the complexity, on the other hand (Silvia, 2008).
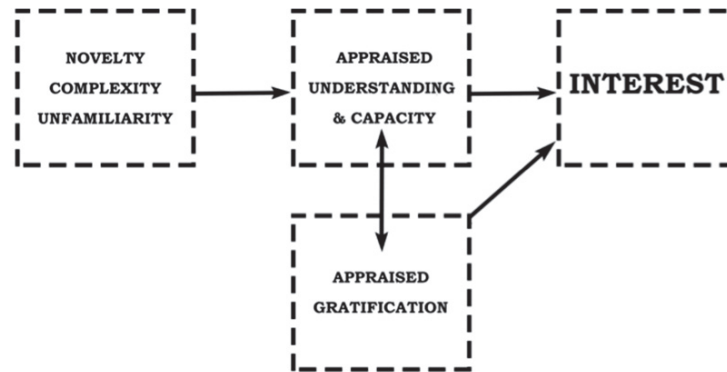
FIGURE 4   Interest as perceived gain from appraisal of understanding complex and novel information.

For the film theory, interest is the more central emotion that filmmakers and scriptwriters should seek in their audiences. Interest keeps the viewers in their seats, with the motivation of spending their mental resources on the audiovisual sequences and with high expectations for the future. Interest gives an emotional structure to the movie and provides the motivation to keep watching it (Tan, 1996). Although other emotions might be more intense and memorable, interest holds over time and if the movie is good, can span from the first to the last sequence. In fact, the success of a film or a video product depends on its ability to maintain the experience of interest for the entire duration of the video or the film. According to Tan, interest is shaped by the narrative structure and the characters and is created and maintained by varying the level of suspense, mystery, or surprise.

According to the appraisal theory, for interest to be experienced, people need to appraise the elements of the film as novel and complex but comprehensible. Such appraisal may come from stylistics, aesthetics, or the affective features of the film that may be based on combinations of multiple elements of the film, including the types of shots, cuts, music, or elements in the script. Two recent studies (Silvia & Berg, 2011; Tarvainen et al., 2014) have tried to identify these elements by presenting people with short clips of pictures of both genders and asking them to rate the novelty, complexity, interest, and emotions elicited by the clips. Although the participants vary in their interest ratings, diverse combinations of novelty, complexity, and comprehensibility seem to predict interest.

For the last point regarding interest, Tan (1996) suggests that the final experience with a film after watching it must be distinguished from the interest generated at each specific time of the footage while watching it. Interest is the result of the return to the invested effort or the degree of implication in the spectator's immersion in the film. According to Tan, interest and effort provide continuous feedback under the following conditions: 1) When the interest is experienced by the viewer at a specific time, there will be an increment in the

expectations for the resolution of the plot, which in turn will generate a higher return later. 2) The return of the events that are closer to the present moment has more influence or weight than the previous events, independently of whether the valence is positive or negative. 3) The interest generated at a given moment will increase the viewer's effort invested in the following sequence, which in turn will influence an increase in interest generated in the return of the experienced effort. This continuous feedback raises the methodological point that studies trying to capture interest in films should provide continuous assessment of this emotion. In the empirical work presented in this dissertation, we want to follow up on this suggestion and develop methods that will allow us to capture interest while the sequence of events in feature length films unfolds.

2.5   Cognitive film theory

The winner of two Oscar awards, William Goldman is also famous for writing in his book *Adventures in the Screen Trade* (1984) what has become a mantra in the film industry: "*No one knows anything*." Although this was clearly and exaggerated statement to signal the need to conduct film studies, this also has been interpreted as suggesting that because little is known about the factors that predict the success of a film, the responsibility for success mainly lies on the distribution and advertisement strategies of the production companies. Thus, in economic terms, because of the uncertainty surrounding the outcomes, the film industry has been considered a high-risk business or part of "*Extremistan*," as coined by the economist Taleb (2010).

Reviewing the industry's history reveals some support for this negative view since for many years, producers and creators have focused their predictions on observations of previous successes instead of grounding them on empirical research that captures the audiences' experiences (Bordwell, 1989). Traditionally, the film experience has been approached through qualitative and intuitive analyses of interactions with a few viewers; in the same way, they have based the talent of creators on just a matter of intuition and genius (Weisberg, 1993). As we mentiond in the previous section, the emergence of phenomenological approaches to film studies (Sobchack, 1990, Mark, 2000) have offered concrete explorations of embodied subjective experience. Focused analyses of affective experiences for concrete films from both the viewers' perspective and the cinematic expression has had a large influence in turning film theorist to the viewers with the affects of the spectators, and their body reactions being nuclear to understanding cinematic elements. However, empirical studies are needed where these phenomenological experiences can be quatified and validaded. Similarly, audience reception analyses have tried to identify likes or dislikes of audiovisual products such as TV series, ads, etc., by using surveys and ethnographic methods. However, they have not been able to

identify the elements of the product that produce these likes or dislikes in the audience.

In this line, over the last decades, many researches influenced by cognitive theories and methods have directed empirical studies to understand and analyse the phenomena of film experiences. Cognitive film theory is an empirically-grounded, naturalistic approach that uses the methodological tools of cognitive psychology, and some conceptual aproachs regarding the human mind to undertand how humans experience films. According to Plantinga (2002, pp 21-22) *"cognitive film theory" does not necessarily imply a commitment to cognitive science, strictly defined, and certainly not to cognitive science exclusively. One might say that cognitive film theorists tend to be committed to the study of human psychology using the methods of contemporary psychology and analytic philosophy. This can be an amalgam of cognitive, evolutionary, empirical, and/or ecological psychology, with perhaps a bit of neuroscience and dynamical systems theory thrown in the mix"*. Thus, different cognitive theorists approach film studies from different theoretical assumptions and methods, but they share a commitment to use clear and testable assumptions to study how films are processed by the human mind, and a preference for small, manageable research questions.

The complexity of the combination that forms a film poses an enormous methodological problem in the research about film experience (Gross & Levenson, 1995). Hence, the interest of cognitive film theorists to understand the narrative structures, and the cinematographic techniques that give rise to the viewers' reaction to the film have to be broken down into smaller questions (Bordwell, 1989). Thus, some studies have focused on the structures of shots and sequences of different films, which define different styles to characterize genres according to their meaning and/or content (Redfern, 2014). Other studies have examined the psychological and the perceptual aspects of the visual system's reaction to video editing, such as the cut or the camera position and the movements to create impressions of continuity, disruption, and motion (Bordwell, 1989; Bordwell et al., 1997). Video editors try to create bridges to maintain continuity in the spatiotemporal physical features of different shots, so the perceptual system can interpret the sequence as continuous despite the cut (Cutting, 2005; Murch, 2001). Similarly, using eye-tracking methodology, reserchers have been able to track the attention of experimental participants in response to changes in facial expressions, gestures, but also in response to lighting, dialogue and other film elements emphasizing the role of attentional processes as a basic aspect of film viewing (Smith, 2011).

Emotional processing has also become a major area of interest in cognitive film theory (Grodal, 1999, Tan, 1996, Plantiga, 1999, Smith, 1995) . The basic assumption of cognitive film theory in this respect is that emotions have cognitive components so that our emotional responses to some film elements depend on how we evaluate and interpret the information. Thinking and feeling are intimately related in the spectators' responses to films (Plantiga, 2002). For example, character engagement has been considered as one of ways in which the viewer becomes emotionally involved. The work of Murray Smith (1995), Plantiga (1999) or Choi (2005) among others, on empathy that we

partially reviewed in the previous section, identified engagement with the characters as an important source of emotions. In Smith's theory, character engagement starts by recognition processes that make the spectator constructs the character's mental representation; alignment processes by which spectators placed him/herself in relation to characters, and allegiance or evaluation processes by which spectators morally evaluate the characters. In some of their studies, film theorists have shown how some narrative devices as the *Structure of the Point of View* (for example, having the camera take the point of view of the character), close ups on faces with emotional expressions, etc. align the spectator with the character (Smith, 1995). On the other hand, the degree of the viewer's knowledge can also impact how much the viewer focalises in the character. For example, Choi (2005) argues that the less the spectator knows about the character, the more he/she will focalise in the character and the more imagining processes he/she will engage to understand the character experience.

Lightening and colors have also been considered important tools to induce emotional reactions (Zettl, 1990) and have been subject of investigation. Empirical data have shown the reliability of some lightning techniques. Thus, low-key lighting characterized by contrast between light and shadow areas dim lights induce sadness, fear, and surprise for sad, frightening, or suspense scenes, while high-key, bright lightning induce joy, Zettl (1990) also suggests black and white, dim lightning produce *internal* and intimate feeling apppropriate for some scenes, while colorful scenes make emotions external. In general, film theorists propose that color evoke potent emotional responses in viewers, and it is, therefore, an important emotional tool for filmmakers, that can also be used to shift attention to different parts of the frame . However, these research also shows that there are no universal ways of using colors, and that appropriate use of color always depends on the context and experience (Bordwell and Thompson, 1989; Zettl, 1990).

Because filmmakers have also use the accompanying soundtrack and musical scores to contribute to the story's meaning and convey emotions, some studies have focused on the impact of different techniques to elicit emotional experiences in the spectators. Music is sometime play in parallel with a given episode to enhance or diminish its emotional impact. The interplay of pitch, timing, and loudness characteristics makes music evoke different affects and mood moods (Levi, 1982). Congruence between the mood induced by the music and the visual scene is assumed to intensify the induced emotions, but also *ironic contrast* (Bordwell & Thompson, 1979; Giannetti, 1982), that is, the use of music that is incongruent with the visual scene or the narrative, have been used to elicit extreme negative affect (Bolivar, Cohen, & Fentress, 1994, Boltz, 2001).

Finally, studies such as those reported in the previous section have addressed the difficult problem of assessing interest and emotions while experiencing the films. While most of the studies reviewed in the above paragraphs have used experimental methods in controlled laboratory settings

or are based in elaborated philosophical analyses, the more ecological users' experience approach is also starting to impregnate film studies and audiovisual research. Although designers and researchers have largely applied user experiences in the study and the development of new technologies and products (Tullis & Albert, 2013), this approach is still new in the video and film field. For instance, in advertisements and propaganda, companies are aware of creating videos that catch the audience's attention (Lindstrom, 2009), and they often apply emotional sensationalism or shocking elements to video contents. Sometimes, these unconventional ideas pose the risk of producing the opposite reaction in the audience, triggering a negative experience instead of the positive experience sought by the creators (Eckler & Rodgers, 2010).

However, the mass media schools and art schools have recently been influenced by the research on Human Technology Interaction (HTI) by applying users' design to explain the experience that the audience gains from videos (Moggridge, 2010). In this sense, researchers discuss what influence on human cognition is exerted by different narrative structures and technical aspects, such as shot compositions, colors, music, and acting, which form the audiovisual language. The user experience approach, assesses the effectiveness by measuring emotional and cognitive impacts on the viewers and their enhanced positive experience from the different dimensions of the video (Garrett, 2011; Helfenstein, 2012), but looking at situations where the viewer actually interact with the real product and using a variety of methods to extract the viewer mental representation of the product and many aspects of the way they are experiencing it.

In sum, there is a growing interest to understand the cognitive and the emotional factors that underlie the audience´s interest and ensure a film's success. The cognitive film theory is now a flourishing research area with promising theoretical and methodological developments that may help stakeholders understand and predict a film's success. However, as we have mentioned in several sections of this dissertation, it is also clear that a film's success depends not only on the coordination of the quality of individual technical or narrative elements comprising it, but also on external factors such as historical and cultural aspects, which might influence the audiences (Dempster, 2006). As we mentioned, audience reception studies (Hall, 1980; Morley, 2006; Tomlinson 1999) stress the idea that the messages conveyed through the media are not passively accepted by the audience, and that people interpret their meaning based on their cultural background. From this, cultural and socio demographic factors have to be taken into account when studying reaction to media messages, and crosscultural theorires and methods need to be considered. In the next section, we discussed cross-cultural theories and revise literature on the influence of cultural factors on viewers' experiences of the films.

3   CULTURE AND COMMUNICATION

3.1   Cross-cultural dimensions

The modern world is becoming increasingly international. However, cultural differences remain, and people still live under the influence of their national laws, habits, and practices. Individuals differ worldwide in their spoken languages, religious beliefs, and moral standards (Geertz, 1966; Hofstede, 2010). The fast development of new technologies has directly influenced companies, which have become globalized. The Internet is now an essential tool for companies since it allows them to reach customers in diverse geographical locations. It also enables them to provide their customers with product information, reducing the costs of traditional selling and marketing strategies. Currently, a small clothing store can sell t-shirts to a customer who lives thousands of miles away from the establishment. For these reasons, understanding the cultural differences of customers from various cultures has become critical in internationally oriented design projects and products. It is very important for companies to understand the users' experiences and the impacts of their products across cultures. For instance, in online shopping, website designers have to take into account the different cultural backgrounds of the users when navigating the sites, so they can experience pleasant thoughts and feelings to motivate them to buy the products. Additionally, new communication technologies have increased the number of companies with cross-cultural work teams, which often work from different parts of the world. Cultural diversity enhances work groups' performance in several tasks, such as decision making (Scott, 2007). Intercultural communication is becoming a main issue in organizational culture (Hofstede, 1993; Siakas, Balstrup, Georgiadou, & Berki, 2005). In conclusion, academic workers, creative designers, and workers in innovation areas should be aware of cultural issues when developing or improving products and services. Designers and engineers confront cultural issues when defining projects and system requirements, but they often fail since

they do it *ad hoc* or directly ignore the research on cultural factors (Chapanis, 2004).

However, research on cultural factors is relevant for design in both academic and industrial domains (Leidner & Kayworth, 2006), and it also applies to audiovisual and film industries that need to be able to impact audiences from many different backgrounds. Many factors seem to be influenced by cultural values (Ito & Nakakoji, 1996), and it appears difficult to find features that users from all cultural backgrounds consider usable and attractive. For example, many reports show cross-cultural differences in the interface design of websites. Asians prefer bright, colorful, and animated websites that are sometimes perceived as information overload by Westerners (Marcus & Gould, 2001). Hence, in designing video contents to convey positive emotions toward a product or a brand, it is critical to consider which cultural factors may contribute to the success of this goal. In this regard, it is important to find cultural dimensions that influence people's behavior. Cross-cultural research has tried to identify these dimensions. For example, the more influential classification is proposed by Hofstede (2010), who identifies six cultural dimensions in which countries differ, as follows:

a) *Power distance*. This dimension is related to inequality in society and how individuals manage and accept it. Societies that score high in power distance accept the hierarchical order, with a high inequality among individuals. On the other hand, in societies with a low score, there exists a tendency to equalize the distribution of power.

b) *Individualism versus collectivism*. More individualistic societies assume that individuals take care of themselves. In contrast, in collectivist societies, individuals associate with others in a loyal group to take care of one another.

c) *Uncertainty avoidance*. High scores in this dimension describe a society that feels uncomfortable with uncertainty and ambiguity and thus has strong codes for beliefs and behaviors and a low tolerance for different ideas and behaviors. Low scores describe a higher tolerance and a relaxed attitude toward differences.

d) *Masculinity versus femininity*. Societies with a high score in masculinity show a tendency for competitiveness and recognition of success, while societies that rate high in femininity demonstrate an inclination for cooperation.

e) *Long-term versus short-term orientation*. Societies with a long-term orientation enhance the modern model for education and economy, looking for a better preparation for the future. Societies with a short-term orientation suspect any social change and focus on maintaining their norms and traditions.

f) *Indulgence versus restraint*. An indulgent society allows individuals to freely pursue their own gratifications related to enjoying life and

having fun. Restricted societies have strict social rules and deny the satisfaction of certain needs of individuals.

Obviously, these dimensions may affect how people experience and react to audiovisual products. Most films and audiovisual companies are nationally organized and need to adapt their products to the language and organization of a country. But it is also, vital that companies understand the different reactions when creating videos to conform to the cultural characteristics of their customers. However, Hofstede's (2010) dimensions have received much criticism from other researchers. The main reason is that they consider the data on which Hofstede based his dimensions outdated and partial because the data were collected from a single company, IBM. This fact introduced some biases since it imposed cultural homogeneity by generalizing the findings from an organization to the total population belonging to the same culture (Dorfman & Howell, 1988). Additionally, McSweeney (2002) considers nations an invalid unit of analysis for cultural factors since different cultural sensibilities might coexist within a country. A good example of a country with different cultures is Spain (e.g., the Basque culture differs in many respects from the rest of the Spanish regions). Some researchers also express doubts about surveys as reliable instruments to determine cultural differences (Schwartz, 1999).

Trompeenars and Hampden-Turner (2011) also criticize Hofstede's dimensions, arguing that the list is vague and incomplete. They propose the following set of dimensions based on a larger set of data and organizations:

a) *Universalism versus particularism*. What is more important, rules or relationships?
b) *Individualism versus collectivism*. Do we function in a group or as individuals?
c) *Neutral versus emotional*. Do we display our emotions?
d) *Specific versus diffuses*. How separate do we keep our private and working lives?
e) *Achievement versus ascription*. Do we have to prove ourselves to receive status, or is it given to us?
f) *Sequential versus synchronic*. Do we do things one at a time or several things at once?
g) *Internal versus external control*. Do we control our environment, or are we controlled by it?

Despite the possible limitations of these two sets of dimensions, they provide preliminary descriptions to organize the differences in cultural dimensions. They might also provide interesting tools for the first assessment of the distance between national cultures and ways to identify the extent to which they are similar to each other and in what ways.

3.2 Culture and design in communication: Universalism and cultural orientation

3.2.1 Universalism

Despite the importance of cross-cultural research in design, many commercial users and producers of video contents assume that videos can be useful tools to avoid cultural and national barriers to communication by providing much richer sensory experiences that may not be culturally mediated.

Similar to other film theories, some cognitive theories assume that the capacity of making sense of a projected video is universal and not culturally determined (Barrat, 2013). According to this idea, a functioning perceptual system can visually allow any person to understand a film. According to the modularity hypothesis (Barrat, 2013), perceptual and cognitive processes are independent modules with different properties. This hypothesis suggests that perceptual processes are universal and independent of cultural factors, while cognition is prone to be influenced by culture. Hence, to the extent that the presented stimuli depend on these modules, culture might have a larger or a smaller effect.

This proposal can influence how we think of videos and use them. For example, videos are sometimes used in online shopping as comprising a way of offering customers a rich multimodal experience that can be closer to the experience of a physical shop than other perceptual stimuli. Usually, online shops offer products displayed on websites and reproduced in two-dimensional surfaces, such as pictures that lack many of the sensory and the perceptual details of the products (Childers, Carr, Peck, & Carson, 2002; Reinecke & Gajos, 2014). Audiovisual presentations of the products can be used to reduce the communication limits and provide richer perceptual, multisensory experiences of the products. According to the modularity hypothesis, the extent to which videos depend on perceptual processing and cultural and contextual factors should play a smaller role. Companies have understood it and are using this tool (Lindstrom, 2009). Audiovisual contents are known for comprising a large part of the viral phenomena (Eckler & Rodgers, 2014), and videos seem to constitute a great strategy for marketing (Purcell, 2010). However, if we follow the research on design, should not the videos pay attention to cultural factors when aiming to reach an international audience? Do they need to adjust the contents to the cultural characteristics of the viewers since the cognitive module may convey culturally different perceptions, which influence the viewers' experiences that may lead them to the adoption of e-commerce (Pavlou & Chai, 2002)? The same question should be addressed when the film industry is considered.

The universality of emotional processing is a classic question in the field of psychology (Darwin, 1872; Ekman & Friesen, 1971). As mentioned when discussing emotions, universalists have argued that basic emotions, such as

hunger, fear, sadness, and so on, are universal and independent of culture. In their research and attempt to identify basic, culturally independent emotions, Ekman and Friesen (1971) provide evidence that facial emotional expressions are interpreted in similar ways by people from different cultures. As mentioned, the question of the universality of emotions is important for the film industry because if emotions are universal, movie producers can use a culturally independent language (images) to convey such emotions. From this perspective, the cinematographic language (cuts, shots, angles, shadows, and so on) can be considered universal resources to convey culturally independent meanings and emotional experiences (Brown, 2003; Nielssen, 2015). From this standpoint, efficiently managing audiovisual resources should result in producing the desired emotional impact on the viewers. We approach this idea from a user experience perspective on audiovisual products (Silvia & Berg, 2011; Tarvainen et al., 2014). The aim is to use cinematographic language to design films and audiovisual products that enhance the viewers' emotional experiences, independently of culture.

The idea of universality has extended not only to audiovisual language but also to narrative aspects of films. Thus, some authors (Chang et al., 2013; Ivonin et al., 2015) adopt the ideas of the archetype proposed by Jung and suggest that some symbolic elements in narratives seem to transcend time and space. Archetypical events (travel, separation, a hero's fight, etc.) and characters (mother, child, old man, etc.) may provoke universal unconscious emotions when present in narratives and film scripts. Hence, to produce universal emotions in the viewers and go beyond culture, scripts should contain these narrative elements and symbols that seem to provoke such emotions (Chang et al., 2013).

3.2.2 Cultural orientation

Against the idea of universality, the research on web and visual design has shown that aesthetic emotions may vary with culture. Additionally, communication studies have stressed that research should be targeted to features of the audience and that individual differences in culture and education may influence aesthetic emotions and the appreciation of cultural products. Films and other audiovisual products (series, clips, short films, etc.) are cultural items that can be influenced by individual factors regarding knowledge and orientation toward cultural products. Research on the so-called *cosmopolitan orientation* (Cleveland, Laroche, & Papadopoulos, 2009; Hannerz, 1990; Skrbis & Woodward, 2007; Szerszynski & Urry, 2002; Woodward, Skrbis, & Bean, 2008) has shown that knowledge and interest in cultural products, as well cultural habits of individuals, play a major role in the consumption of foreign products. *Cosmopolitan-oriented* people are identified by their interest in other cultures and geographically distant places and activities, as well as by their preference to consume products with different cultural combinations. A

cosmopolitan orientation is usually associated with openness and compromise with social matters (Savage, Silva, Meuleman, & Savage, 2013).

In technology and design research, sociocultural differences and tendencies have been approached from the life-based design (LBD) paradigm (Leikas, Saariluoma, Heinilä, & Ylikauppila, 2013). This approach argues that individuals differ in their *forms of life* (Wittgenstein, 1958), constituting the habits, interests, and activities that they show in a given culture and context. Religious beliefs, support for a football team, and being part of a choir constitute forms of life. Cultural orientations are also considered aspects that comprise different forms of life (Rössel & Schroedter, 2015). In this theoretical context, designers have shown that people with different forms of life might vary in the types of activities and technological devices that are useful to them. From this perspective, designers need to pay attention to the aspects of individuals' lives and the contexts in which technology fits. Similarly, if cultural orientation and cosmopolitanism are considered forms of life, the design of cultural products should take into account the cultural habits of prospective consumers. People with interest in and openness to other cultures and consumers of cultural products may differ in many aspects that may impact their cultural experiences (Geertz, 1973). From this viewpoint, researchers and creators of audiovisual contents must consider different cultures and forms of life when targeting broad audiences. Thus, its approach is that culture may have an effect on how people experience and react to audiovisual products and that audiovisual companies should understand these different reactions when creating videos conforming to the cultural characteristics of its members. An audiovisual product created in a specific cultural context may not have the same impact on a viewer with a different cultural background. Thus, it is critical for designing video advertisements, industrial videos, or feature length films to understand viewers' experiences across cultures.

To sum up this section on cultural factors and cultural orientation, we clearly need to conclude that different orientations and theoretical approaches assign varying roles and importance to these factors. One aim of the empirical work presented in this dissertation is to try to understand the relative weight of universality and culturalism in the appreciation of video contents.

4 OVERVIEW OF THE RESEARCH APPROACH AND EMPIRICAL WORK

4.1 Overall approach

Over the last decades, video and film industries have undergone an impressive worldwide expansion. Video products are generated for different purposes (e.g., industrial, communication, entertainment, etc.) and distributed through multiple platforms across the world. Increased interest in audiovisual products comes from the underlying assumption that they are effective artifacts in inducing emotions and can be used to influence the audiences and increase interest in the depicted content (Gross & Levenson, 1995). This affective power can be used to sell an idea or a product or to change the perception about a company. Additionally, Internet platforms for audio and video products are inexpensive ways for companies to reach a global audience and a global market. Thus, understanding the elements of films and videos that induce emotions and the way that the audience experiences them is critical for both the film industry and the companies using videos for commercial goals and other industrial purposes (Kaikati & Kaikati, 2004). Research on films and other video products is now full of studies trying to identify elements of the audiovisual products that produce specific experiences in the viewer/spectator. But, it is also vital to determine whether the experiences and the emotions conveyed by the features of the films are universal or culturally mediated. Research on interface design seems to suggest that aesthetics and many elements of the design are culturally mediated, with different cultures having varying tendencies for audiovisual elements in terms of complexity, colors, and so on (Ito & Nakakoji, 1996).

The purpose of the studies reported in the next sections is to try to understand the users' experiences of audiovisual contents and the cultural differences in the way these audiovisual products are experienced. Our theoretical approach to emotions and experiences comes from the field of the user experience and the appraisal theory. The idea is that users' experiences are mediated by mental contents and that symbolic representations mediate

between the objective stimulus and the emotional reaction it elicits. Thus, appraisal processes start with processing of the perceptual features of the stimuli, followed by automatically recovering associated memory contents and finally, through slower reasoning processes, conveying meaning and creating mental representations of the stimuli, with the last step providing the bases of cognitive and emotional experiences (Saariluoma & Jokinen, 2015). This theoretical approach determines our methodology (see the next section). Since our intention is to capture emotional experiences based on mental contents, we use methods that try to capture these mental contents. In this, our approach differs from phenomenological approaches to emotional experiences, from audience reception studies and from the cognitive experimental approaches that we reviewed in previous sections of this dissertation. As we mentioned, phenomenological approaches are based on subjective analyses of few viewers' experiences; audience analyses are mainly based on large surveys focused on demographic analyses, and experimental studies are usally performed in very controlled environments and material looking at isolated elements. Although all these studies are necessary and useful, the user' design approach as applied to video and film studies might fill in the gap and be able to explore factors that impact the viewers' experiences while they interact with the video in more natural contexts and with realistic materials. Similarly this approach permits to add cultural factors into the studies to be able to also address the question of universality. As we will explain in the next section, we used mixed methods in our studies since we think that the complexity of the problem deserves the variety of approaches that it is usually combined in the users' design aproach.

4.2   Methodological approach

As mentioned, an important goal of the studies reported in this dissertation is to capture mental contents and specifically, to find out what aspects of the displays capture interest (an emotional mental content) and enhance positive experiences of viewers. What then is the proper way of capturing mental contents from viewers? According to Saariluoma (2003), analyses of the appraisal process provide hints about the object of analysis of users' experiences and the procedures that can be used to study them. Mental contents are composed of sensations from the perceived object, memories and emotions retrieved during the associative process, and thoughts and beliefs connected through conscious reasoning. Hence, in studying users' experiences, we need to use procedures that are related to the different aspects of the mental contents and the external objects or events to which they refer (Saariluoma, 2003). Similarly, McCarthy and Wright (2004) propose that the user experience is the product of a number of processes that include anticipating, connecting, interpreting, reflecting, appropriating, and recounting different elements of the sensory experience. This view also emphasizes that experiences comprise

different elements of the mental contents; therefore, the empirical methods should try to capture these different elements and the relations among them.

Because mental contents are always about objects and events occurring in specific contexts, the methods used to capture the elements of the experience have to take into account the context in which they occur. Therefore, empirical studies should be contextualized (online shopping, platform for communication, or watching a film with entertainment purposes) and culturally oriented. As we mentioned in the introduction, our empirical studies are targeted to makers of audiovisual contents in both industrial and entertainment contexts, and our aim is to provide with methods that can be used to extract people experiences in these two contexts. Hence, in the studies that we report, we have selected two contextual settings to examine the impact of videos on the users' experiences. The first is related to product advertisement in industrial contexts (Studies 1 and 2), and the second involves feature length film viewing with entertainment purposes (Studies 3 and 4). While the first is of interest to any type of industry, the second is obviously directed to the film industry and filmmaking. Moreover, the studies reported below take a cultural perspective by studying participants from different countries (Articles 1, 2, and 5) and cultural orientations (Article 4) exposed to highly culturally loaded videos and films (Studies 1 to 4). As materials for our studies 1 and 2, we selected three videos and three still images from the Finnish design brand Iittala. The reason for selecting these videos for the industrial setting was the international fame of this Scandinavian design company. Iittala has been one of the most representative brand of this design style throught decades and it is still very well known nowadays. Also, as it is a Finnish brand, we could ensure that the background experience of participants from Finland and Spain would be different as the purpose of the research was to test if videos could reduce the differences on experiencing the product. Finally, a practical reason also determined the selection since this company had already colaborated with our department in previous research. For the studies on feature-lenght films, we selected three films produced in different countries and different languages that shared a genre (drama) and main theme (children of war). The selected films were "The Empire of the Sun" (US), "Ispansi" (Spain) and "Mother of Mine" (Finland). We selected these films since they had survived the test of time and they are still watched and discussed by movie experts. In addition, they all conveyed a balance of positive and negative emotional experiences, and therefore were suitable to assess their emotional profile. The Finnish and US films had Spanish subtitles. An additional reason to select these films is that they came from countries that differ according to many of Hofstede's cultural dimensions. Thus Spain seems to differ from Finland and United States in a number of dimension such as individualism, uncertainty avoidance and indulgence (Hofstede, 2010; Morden, 1999; Van Everdingen and Waarts, 2003). These differences in cultural dimension are probably reflected in national films and may be perceived differently by people from different cultures.

To study mental contents, different methods have been developed to investigate the users' cognitive and emotional experiences. These methods often ask the users for open verbalizations of their experiences. Verbalizations can be analyzed by means of verbal protocols and content analyses to extract mental contents (Ericsson & Simon, 1984); interviews, questionnaires, and rating scales have also been used to assess users' experiences (Leikas, 2007; Nagamachi, 1995). All these methods have advantages and disadvantages; the right choice depends on the research question and the aspect of the mental contents under study. Questionnaires and structured interviews can provide information on specific aspects of the mental contents that are of interest to the researcher. They provide the means to elicit and capture concrete aspects of the mental contents that may not be so easily and spontaneously verbalized. Concrete questions can be directed to externalize subconscious aspects of the mental contents. Questionnaires can take the form of surveys when the number of participants is large, and there is no special need to have direct contact with them. Surveys can be used to collect a large data set from participants in different geographical locations at a low cost, but they require careful planning. On the other hand, verbal protocols provide richer, more detailed information about these contents and capture unexpected aspects of the mental representations (Saariluoma, Jokinen, Kuuva, & Leikas, 2013) although the data collection is costly and time consuming; therefore, only a small number of participants can be used. A problem with the use of verbalizations (being in the form of think-aloud protocols), questionnaires, or scales is that they are disruptive if answered while watching the videos, and they make viewers reflect on their experiences while watching the movies. Hence, they are usually introduced after the videos, with the limitation of then being dependent on memory and reflections on the overall experience with the film. To overcome these difficulties, part of the effort of the dissertation has been devoted to developing a voting system that has allowed us to capture emotional experiences online without causing much disruption to the viewers. Articles 3 and 4 describe and illustrate the use of this system.

However, to fully understand the mental contents underlying users' experiences, both conscious and unconscious aspects of the experiences should be captured. Therefore, the studies in these areas could preferably use a mixture of methods to create situations in which conscious and subconscious mental contents are made observable. Our approach has been to use both questionnaires and verbal protocols to assess the impacts of different forms of audiovisual contents (see Articles 1 to 4, and 5 for a survey). For example, in our studies, the participants (sometimes from different cultural backgrounds) are exposed to different types of visual contents (images of commercial products, short commercial videos, or feature length films). The thinking-aloud protocol and questionnaires were used to assess the participants' cognitive and emotional experiences. They were asked to describe their emotions and impressions during the presentations of the products (static, content-oriented videos, and aesthetically oriented videos), with questions such as "How do you

feel when watching these products?" or "What aspects of the film did you like the most?" Sometimes, they were also asked to describe their emotions on a rating scale or use the voting system during an online film viewing.

TABLE 2   Mixed-method combinations in the empirical studies (Articles 1 to 4)

Study	Data Collection	Material	Analysis: Method	Approach
Video versus image: Product presentation	Thinking Aloud	Three still-image presentations	Content analysis: Categorization	Customer response to product presentation
	Interview	Three video presentations	Content analysis: Categorization	Customer response to product presentation
Video experience of product presentation	Thinking Aloud	Three video presentations	Content analysis: Categorization	Participant response to video characteristics
	Interview		Content analysis: Categorization	Participant response to video characteristics
Film experience	Voting system	Three feature length films	Quantitative analysis: Voting system	Identifying sequences that arouse viewers' interest
	Surveys		Quantitative analysis: Surveys	Classifying viewers' backgrounds and forms of life
	Interview		Qualitative analysis: Content analysis	Identifying elements and dimensions that arouse viewers' interest

While the quantitative data were analyzed with standard statistical methods (factor analyses, regressions, and analyses of variance), the qualitative data included analyses of the contents of the film sequences and of the participants' verbal protocols. The verbal protocols were analyzed by using content analysis (Weber, 1990). The content analysis in our studies applied a data-driven approach, with the goal of detecting affective contents from the participants' descriptions of their product experiences. Semantic units were transformed into content categories. These analyses focused on the semantic units that directly referred to the products or to certain aspects of the videos and the films. These semantic units were usually further grouped into broader categories that in many cases constituted the bases for statistical analyses, comparing the presentations, the participants of different nationalities, or the films from different cultural backgrounds. All these analyses included

comparisons of the mental contents and the user experiences of the participants in the three countries to assess the role of cross-cultural factors.

In sum, protocol analyses, combined with questionnaires and other content-based methods, provide useful means to study the mental contents underlying the users' conscious experiences. Mixed-method research, combining qualitative and quantitative data (Johnson & Onwuegbuzie, 2004), has the advantage of allowing researchers to look for the convergence of several measures to corroborate effects and to explore different aspects of the same phenomenon (Johnson & Turner, 2003).

The mixed-method approach that we have proposed is based on the appraisal theory and the idea that mental contents representing products should be the units of study when analyzing users' experiences. We have also argued that these mental contents should be contextualized so that empirical studies should address specific contexts. Thus, empirical studies of users' experiences should be conducted, knowing the purpose of the audiovisual product under study, the environment in which the product is intended to be used (e.g., advertisement, online shopping, entertaining films, etc.), and the demographic and the cultural factors that may influence the design. In this dissertation, these arguments have been applied to the study of audiovisual contents to be used in different countries. Our idea is that audiovisual contents could provide customers with dynamic multisensory information that might increase the quality of users' experiences. In our studies, we aim to assess the hypothesis that these audiovisual elements will be successful only if their contents are adjusted to the type of product and the characteristics of the user. Because culture is an important determinant of users' likes and dislikes, design studies should explore the mental contents and the emotional experiences of people from different countries and cultural dimensions.

4.2.1 Validity and reliability

As mentioned, mixed-method research has the advantage of combining qualitative and quantitative data, with the purposes of searching for the convergence of different measures and exploring the phenomenon under study from different perspectives (Johnson & Turner, 2003). However, mixed methods confront validity and reliability threats that go beyond those from single qualitative or quantitative designs (Onwuegbuzie & Johnson, 2006). For instance, sample integration (if the sampling design allows integration of the conclusions from qualitative and quantitative data), inside–outside legitimations (balance between interpretations of qualitative and quantitative data), weakness legitimation (addressing validity threats from qualitative and quantitative parts of the data), sequential legitimation (the proper order of obtaining the two types of data), and so on, have been proposed as validity threats that can be present when combining qualitative and quantitative data (see Ihantola & Kihn, 2011 for a review) .

Obviously, because our studies involved quantitative and qualitative data, we had to address some of these validity threats. Here, I present my team's discussion about those that we thought were more critical for our studies and the ways we faced them.

Weakness legitimation. Onwuegbuzie and Johnson (2006) explain that researchers using mixed-method approaches may have so much confidence in the strength of combining methods (triangulation) that they may forget the usual validity and reliability problems of quantitative and qualitative data that may still be present when combining them. They call this problem *weakness legitimation*. For example, in our studies, the use of content analyses by a single coder could have a validity threat despite being employed in many cases in conjunction with quantitative data. To assure reliability of our categories and semantic units (single words, phrases, and idioms describing cognitive and emotional experiences) were identified first (see Weber, 1990), through several iterations of categorizations and the mutual agreement between two coders, and then by critically evaluating the semantic units under the initial categories. Statistical analyses of the frequencies of the semantic units under the categories were performed after the assurance that an appropriate sample size allowed group comparisons and statistical inferences. Similarly, when introducing a new quantitative method for measuring interest, we assessed the consistency of our scores by splitting the sample and calculating interrater reliability. Since we wanted to show that our results were generalizable across films, we calculated these indexes for three films. Finally, we supported our voting scores with qualitative data to provide a content validity check for our voting scores as a measure of interest.

Sample integration legitimation. According to Ihantola and Kihn (2001), drawing inferences from qualitative and quantitative data can sometimes be problematic unless exactly the same participants are involved in the two phases of a study. Thus, inferences might not be possible if the qualitative data came from a different and much smaller sample of participants compared to the quantitative data, and the problem might be worse when the quantitative data also came from a small sample, where the transfer of the interpretation from one set of data to the other would not be justified. In our studies, we tried to address this problem by collecting qualitative and quantitative data from the same participants and including appropriate sample sizes. For example, in Article 3, the study comprised multiple phases within a session, as well as a delayed session where only a few participants from the same sample were asked to provide thinking-aloud protocols from some of the selected sequences. Despite different samples providing qualitative and quantitative data, we ensured that the sample size for the quantitative phase was large (60 participants) and that the smaller sample for the qualitative phase was representative by randomly selecting participants from the sample for the quantitative phase. Hence, when combining quantitative and qualitative data, they appropriately came from the same sample (Ihantola & Kihn, 2001).

4.3 Overview of the studies

The empirical work that comprises this doctoral dissertation is organized into six articles that have been submitted to conferences and scientific journals. This section presents the main objective, the method, and the key results of each study.

In the study reported in *Article 1*, we compared the emotional and the cognitive experiences of Finnish and Spanish participants when they were presented with static images and dynamic videos of culturally loaded (Finnish) products. The **objective** was to study the users' experiences of products when these were introduced with images and videos. We aimed to identify the cognitive and the emotional dimensions introduced in the users' experiences when video contents rather than static images were displayed to present the products. Additionally, we wanted to explore if experiences of the products varied culturally. With this idea in mind, we selected images and videos of *Iittala* products (Finnish design) to assess whether the participants from the two countries (Finland and Spain) appraised these in a similar manner. In the study, the participants interacted with three audiovisual products depicting images/videos of the brand design. They were presented with the designs and asked to verbalize their thoughts and feelings while watching the images and the videos. Content analysis of the protocols allowed us to identify the critical dimensions and their relative weights, depending on the nationality and the type of presentation (image or video). The results indicated some differences in the way that the products were represented by Spanish and Finnish participants. The Finnish participants relied more on their memory and familiarity with the context and the brand, whereas the mental contents of the Spanish participants reflected emotional impressions, desirability, and qualitative impressions of the products. However, the more interesting aspect of this study was that these cultural differences were reduced when the participants were presented with video contents. Content analysis of the verbalizations after the presentation of the videos clearly showed that for both Finnish and Spanish participants, emotional expression, congruency, desirability, and quality were the more important dimensions in their mental contents. Thus, audiovisual contents seem to increase emotional experiences and focus on the product design, diminishing the influence of cultural factors. The results' overall pattern supports the idea that cultural factors, sometimes related to familiarity and memory, influence the representation of the products, but cultural differences are reduced when video contents are introduced when presenting the products.

In *Article 2*, we focused on the features of the videos that captured the viewers' interest and enhanced their cognitive and emotional experiences. Importantly, we aimed not only to assess the elements of the videos influencing the viewers' experiences but also to support the psychological reality of some aesthetic dimensions. Finally, we intended to explore these two aspects from a

cultural perspective, seeking evidence of the importance of culture in modulating users' experiences of audiovisual products.

With these aims, we analyzed the verbalizations of Spanish and Finnish participants when they were exposed to three videos representing Scandinavian design products (see *Article 1*). The analysis was conducted to detect what aspects of the videos aroused the users' interest and how these aspects affected the viewers' emotional and cognitive experiences. Thus, the participants were asked to verbalize the thoughts and the emotions that the videos suggested to them and to mention the video elements that they would highlight from each video. To analyze some of the dimensions eliciting the users' impressions, we focused on different types of aesthetic dimensions. Thus, we investigated whether the participants' mental representations of the videos included elements related to the aesthetic qualities of the videos (e.g., *the video is colorful*), aesthetic emotions (e.g., *the video makes me feel nostalgic*), and the aesthetic intention of a specific element (e.g., *the color is trying to capture my attention*). Through content analysis of the participants' verbalizations, we identified categories and subcategories that defined the representations of the video elements and their relative weights, depending on the viewer's cultural background. These categories were related to the overall impression about the videos (aesthetics, emotion, and memory), as well as their narrative structures and visual and audio designs. In line with aesthetic theories, in the participants' mental representations of the videos, we were able to identify different aesthetic dimensions and to classify the units that reflected the aesthetic contents of some visual, audio, or narrative qualities of the videos, separately from the units that represented the emotional aspects elicited by the aesthetic quality of the videos. Regarding cultural differences, although the results indicated common elements affecting the viewers of the two countries, they varied in the relative weights of global aesthetic features. Different elements comprising the overall impression about the videos, as well as the emotional perceptions about music aesthetics, seemed to impact Spanish and Finnish viewers in different ways. Thus, the elements of the medium in which the product is presented affect viewers in different ways and could be utilized in providing guidelines for designing product advertisements or web applications.

In *Article 3*, we aimed to study feature length films. The studies described in our two previous articles focused on the impact of videos on the apperception of products in the industrial context (*Article 1*), the videos' features that affected the viewers' experiences and might influence the overall experience of the presented industrial videos (*Article 2*), and possible cultural differences in the apperception of the products and the videos (*Articles 1* and *2*). However, in *Article 3*, we aimed to further study the videos' features that influenced the audience's experiences, but we wanted to move from short (a few minutes long) industrial videos to feature length films. We intended to address the following questions: What are the emotions produced by films? What are the factors that create them? How do they differ in various cultural contexts? However, we first had to confront the methodological challenge of

finding ways of assessing the viewers' emotional experiences online while they were watching the films without disrupting their experiences by introducing questions that they had to answer or asking for thinking-aloud responses that might interrupt their processing of the films. Previous research on film processing (Silvia & Berg, 2011) had used selected short sequences, online-disrupted annotations of feelings, or memory-dependent answers to questionnaires after viewing the films. Although these approaches also provide useful information, we were interested in assessing the emotional experiences online and then qualifying them through an offline verbal protocol. For this reason, we developed a methodology that allowed people to signal online (using a voting system) the film sequences that aroused their interest and thought were central for understanding the film. The system also allowed capturing emotional valence by using two buttons to signal positive and negative emotions, respectively. This online voting system was complemented with offline data about the viewers' reactions as noted in their answers to the questionnaire. Thus, at the end of the film, we asked the participants to fill out a questionnaire regarding the film's aspects and sequences that evoked their interest. In *Article 3*, we described this new method and some empirical data to illustrate some psychometric properties and possible applications. We also illustrated how to combine the quantitative online voting indexes with qualitative offline data to study the users' experiences with different structural features of the movies. Finally, we discussed several possible ways that the method could be used to improve the scope of future studies. This new method aimed to facilitate significant advances in the field by providing a solution to the problem of studying viewers' online reactions while watching feature length films.

Once the methodological challenge was addressed, *Article 4* aimed to identify the emotions evoked by films, the factors that create them, and the ways that these factors might differ in different cultural contexts and cultural orientations. We also addressed the problem of the relation between emotions and film experience. We aimed to analyze online emotional experiences with feature length films to explore the extent to which these experiences would contain universal properties or be culturally mediated. Dominant standpoints consider that movies elicit universal experiences. However, the data from audiovisual design suggest that filmmakers and producers may need to be aware that audiences differ in many features that may influence how they perceive a movie. When targeting audiences, different forms of life and cultural orientation might transform perceptions and thus the experience of movies. In this study, we explored whether emotional experiences with films would contain universal features or (on the contrary) whether these features would depend on the match between the cultural backgrounds of the viewers and the film or on the cultural orientation of the viewers (e.g., open to other cultures). Thus, we first compared the emotional experiences of a culturally uniform Spanish audience when viewing culturally different films, matched by gender and topic. Second, we compared the experiences of people with different

cultural orientations for the three culturally diverse films. Here, our aim was to investigate if cultural cosmopolitanism (an individual's interest in other cultures) would influence the experience with culturally loaded films. In the study, we asked the participants from Spain to watch three movies produced in three culturally different countries (Spain, the US, and Finland). We captured the viewers' experiences by means of the online voting system previously described in *Article 3*. We asked the viewers to indicate the more interesting scenes by pressing the buttons while watching the film. Additionally, we asked them to fill out offline questionnaires before and after viewing the films, which were used to qualify the participants' quantitative responses. Contrary to our expectations, the results indicated very few differences among the films and among the culturally oriented groups. This pattern is interpreted as suggesting that at least some emotions seem to be universally experienced in some aspects of the films, probably related to archetypical figures and events. However, we need to take these conclusions with some caution. First, the films all came from Western cultures, and a comparison between more extreme cultural differences might show variations in emotional experiences. Second, to control for the films' genres and topics, the three selected movies displayed common archetypical events and figures; other genres (e.g., comedy) and topics could possibly evoke different culturally loaded emotional experiences. Finally, our participants all came from the same cultural/national background (Spain) and were very similar in education and age. Quite possibly, comparisons of viewers with different nationalities and ages might yield different results. The same data suggest that older people with less access to and experience with technology and audiovisual contents are more susceptible to cultural effects. Cultural globalization is a relatively new phenomenon that may produce age differences in the way that cultural products are perceived. In the next article, we explored cultural factors and age differences in how technological products are apperceived.

In *Article 5*, we addressed the questions of culture and age. We digressed from the dissertation's main topic to address how mental representations of technology could be affected by age and culture. We focused first on technology instead of video products since there were already suggestions of technological gaps between older and younger people, and we wanted to obtain direct evidence of this gap before moving to more subtle differences in the way that older generations perceive audiovisual products. For example, Prensky (2006) distinguishes between digital "natives" (who have grown up with digital technology) and digital "immigrants" (adults who have encountered it later in life). He argues that digital natives differ in their learning style from digital immigrants. The aim of the study for this article was to test the effects of age and culture on how people would mentally represent and experience technologies by comparing the conceptions of old and young people in Spain and Finland. Both Spain and Finland are European countries but significantly differ historically, geographically, and culturally. The study was framed within the LBD paradigm, where culture and age interact to define particular forms of

life in which technology might be used and perceived differently. An obvious assumption was that older people who had lived in a much less international world represented modern products differently from younger ones. We hypothesized that there might be differences in Spanish and Finnish people's mental representations of technology but that those differences should be mediated by age. According to these predictions, our results showed that technology conceptions between the two countries differed when considering older generations. However, when we considered younger generations, the technological gap between the two countries was smaller. An important conclusion from this study is that culture-oriented research and design should be aware of the aspects that differentiate generations in a specific period of time. By generalizing these findings to video and film design, many more cultural differences might be found when comparing older generations that had lived in a less globalized world. However, this assumption needs to be empirically tested, and it would be the object of some of our future studies.

Finally, the last article of this dissertation, *Article 6*, represents a long-term project in which we first aim to build a method to develop audiovisual scripts and then to create a new narrative product to provide a role model for gender empowerment in information technology (IT) professions. The main assumption is that the small presence of women in IT professions is due to the lack of role models for women. Conventional media in Europe and the US produce TV series and shows that discourage girls and women from pursuing IT careers. This project proposes Design Science Research-based effective methods for efficient sitcom scriptwriting that promote female participation in IT professions. The paper supports the idea that suitable multicultural edutainment through positive and pragmatic role models could successfully lead to an increased number of women as IT professionals in the future. The project outlines an innovative contribution for audiovisual industries that can foster social change through creative processes that take gender and multicultural considerations. In this sense, this last paper introduces a future innovative line of research that follows up some of the ideas developed in this dissertation.

5 CONCLUSIONS AND FUTURE RESEARCH

Audiovisual products are considered effective tools to induce emotional experiences and increase viewer interest in the messages they convey (Gross & Levenson, 1995). The general aim of this dissertation is to try to understand the video properties that influence the users' experiences of audiovisual contents and the cultural differences in how these audiovisual products are experienced. Although the studies reported in this dissertation involve an initial approach to the study of videos and films in a cultural context, and much remains to be done to increase our understanding of the factors underlying viewers' experiences of videos and films, a number of facts and conclusions can be extracted from our data. This section summarizes our main conclusions and discusses the more important data. The discussion has been organized into several sections that reflect this dissertation's main contributions to each of the objectives and questions posed at the beginning of this work (see Section 1.2). Thus, I have first explained the differences in the mental representations of products when presented by static images or dynamic videos (objective 1). Second, I have discussed the mental representations or mental contents of video experiences (objective 2), to later (in the third point) concentrate on interest as an emotional experience aroused by videos (objective 3). Fourth, I have started to describe cultural differences in the way that videos and films are discussed, including the idea of the universality of emotional reactions to audiovisual experiences (objective 4). Finally, I have pointed out some sociocultural differences (cosmopolitan orientation, age, etc.) that may influence how films are experienced (objective 5). The discussion now concludes with some methodological considerations and an outline of what I think should be the focus of future research.

5.1   Static images versus dynamic videos

Although most of the studies included in this dissertation used dynamic video contents, our first study compared the participants' experiences with a commercial product when presented with static images or dynamic commercial videos. This comparison made it possible to extract some commonalities and differences in the way that the participants experienced the product, depending on the presentation's format. Generally, for both images and videos, the participants' verbalizations reflected that the more important dimension was what we termed the "overall impression of product attachment" that included general expressions of emotion, self-congruity, and desirability, and the attributes referred to the perceived quality of each product. For both images and videos, these subjective impressions were more significant than other more objective factors, such as the purpose of each product or the familiarity with the product and its properties. However, the overall distribution of the verbalizations differs between images and videos since the superiority of the overall subjective impression was much greater with videos.

Thus, the mental representation of each depicted product seems to be a distributed mixture of subjective experiences and objective elements (properties, functions, and familiarity) of the product when the participants experienced them through static images. However, when the products were introduced by means of videos, most of the verbalizations referred to subjective impressions and aesthetic elements and very few to more objective aspects of the products. Thus, consistent with film and video theories and with previous data that we discussed in previous sections of this dissertation (Moggridge, 2010; Tan, 1996), videos seem to be emotional artifacts that convey aesthetic emotions and experiences more effectively than other forms of communication. As discussed later, an interesting property of videos is that their emotional meaning appears to diminish the differences between the experiences of Finnish and Spanish participants. Unsurprisingly, the Finnish representation of the Finnish products contained many more references to past memories, associations, and familiarity with the products than the Spanish participants mentioned. Verbalizations of Finnish participants included expressions such *"I have been watching this all my life" or "from grandparents' home, old ladies decoration,* much more often that Spanish participants'. However, the frequency of memory and familiarity references diminished for video presentations of the products, and for both Spanish and Finnish participants, the number of aesthetic-related verbalizations regarding emotional experiences such as *calmness and concentration, pleasantness, beautiful and usable* increased. Hence, videos seem to have the property of reducing cultural differences. This point is discussed further in the next sections.

5.2   Mental contents of video experiences

The comparison of images and videos suggests that videos provoke different emotional experiences in the audiences than static images of the same products. Obviously, videos contain many different elements, from narrative structures to visual and audio compositions. These elements combine to create an overall emotional experience, but how do these elements combine? What aspects of the video are captured by the viewers and represented in their minds? The results presented in Article 2 provide some answers to these questions. Analyses of the verbal responses to the videos suggest that the overall impression involving aesthetic and narrative elements is the more important aspect of the videos in the viewers' mental representations. Audiovisual experiences seem to involve both the overall aesthetic evaluations of the videos ("*They are trying to make you think about the shapes of everything; The video makes me feel calm; The video gives warmth")* and more detailed aspects concerning the narrative structure ("*this story didn't get me on its side")* and the visual and the audio designs ("*Quite a lot of graphic lines and details")*. From these findings, we identified different aesthetic dimensions that reflected specific aesthetic contents (visual, audio, or narrative qualities of the videos), separately from units that represented emotional aspects raised by the global aesthetic quality of the videos ("*peaceful feeling, because of the happy, bright images")*. We also identified aesthetic persuasion including units *("they are talking about design")*, where the participants verbalized their interpretations of the intended meanings of different elements of the videos (Carroll, 2001). This pattern supports theories that defend the multidimensional aspects of aesthetics, including its cognitive, emotional, and intentional/interpretive aspects.

The finding about semantic units corresponding to aesthetic persuasion ("*They are trying to make you think about the shapes of everything*") is especially interesting for appraisal theories of emotion (Jokinen, Silvennoinen, Perälä, & Saariluoma, 2015; Silvennoinen, Rousi, Jokinen, & Perälä, 2015; Smith & Kirby, 2004). The evaluation of the aesthetic persuasion of a video includes perceiving the audiovisual stimuli, identifying associations drawn from memories, and critical reasoning that considers the intents of the aesthetics of the stimuli (Eckler & Bolls, 2011). Thus, the mental representations of the videos include global and local aesthetic elements of the video contents, as well as representations of the intentions for which these elements are included in the videos.

5.3   Interest as a complex emotion

Film cognitive theorists assume that interest is a central emotional experience that may determine a film's success. Interest involves the appraisal of the degree to which an idea or an event is novel, complex, and hard to process,

followed by the appraisal of whether it is possible to understand the event despite its difficulty. An event is interesting when the result of these two appraisal processes is positive, and people find the event complex but possible to understand (Silvia, 2005b; Tan, 1996). Importantly, interest raises high expectations for what is to come and increases the viewer's tendency to continue watching the film. According to Tan (1996), interest provides an emotional structure to the videos and the films since through narrative, visual, and audio elements, interest is aroused and maintained along the sequences that unfold the narrative. Thus, positive experiences with films come from elements that achieve the objective of maintaining high to moderate levels of interest throughout the film. From this perspective, it becomes critical for filmmakers and video producers to understand the audiovisual product's elements that elicit the audience's interest.

How then do we capture interest? How is it possible to capture the viewers' emotional interest while they are watching the film without interrupting the emotional experience that we want to capture? To meet this challenge, we have developed a new online voting system that allows us to capture interest and emotional valence while people are watching feature length films. As suggested by previous researchers (e.g., Tan, 1996), the results of the voting system on the three films show that interest unfolds across the sequences, with the distribution of the interest varying along the movies, with some sequences producing peaks of interest in different parts of the films. Analyses of the sequences producing these peaks indicate that interest is aroused in sequences with complex emotional structures, where positive and negative feelings combine to produce the overall experience of interest. For example, for the movie "Ispansi," the audience most frequently mos voted sequence consisted of the return of one of the main characters to Spain after her odyssey in Russia during World War II, and the reunion with her brother. She belongs to a family that supports Franco's army, but in Russia she was living with Republican exiles. The sequence combines positive and negative emotions and complex narrative elements where in the siblings dialogue the two sides of the war are combined in the character experience. Hence complex narrative an emotional sequences seem to arise the audience interest. By contrast, the audience considered a simple sequence introducing a small detail in the plot (a secondary character suspects the main character of not being on the Republican side), the least interesting sequence. These critical sequences (the most and least voted sequences) were analyzed by combining quantitative responses to each shot in a sequence (coming from the voting system), as well as by examining the contents of the sequences and the participant questionnaires and verbalizations of the sequences. Nonetheless, the more interesting point here is that the emotional experience of interest is heightened in complex emotional sequences and maintained to a moderate level during the entire movie. The fact that interest is aroused by complex emotional sequences supports previous claims that interest is elicited by novel and complex events that can be understood (Silvia, 2005a). Another noteworthy fact is that for all the movies,

there are peaks of interest toward the end, where the plot and the conflict in the story have to be resolved. The results of this analysis open interesting possibilities for further studies where comparative analyses of the interest profiles of movies can be performed to explore changes in these profiles as functions of the characteristics of the viewers (cultural, demographic, etc.) and the films (genres, styles, etc.).

5.4   Cultural influences on image and video processing

One of the main objectives underlying all the studies in this dissertation is to take a cultural approach and explore the role of cultural factors in videos' and films' mental representations of the depicted products, as well as the mental representations of the actual features of videos and films. From appraisal theories, we expected that because appraisal would depend on contextual factors, various cultures might apperceive the visual objects differently. In fact, studies on visual design have already found cultural differences in how people experience visual and aesthetic elements (Ito & Nakakoji, 1996). Our studies have mixed results, however. Comparisons of images and videos in our first study show some differences in how the cultural commercial products are perceived (*littala* products). Finnish and Spanish participants show different associations to retrieve memories, with Finnish participants relying more on verbalizations of familiarity and past experience, while Spanish participants depend on verbalizations of aesthetic emotional impressions of the products. Thus, our data support the idea that cultural factors related to familiarity and memory influence the representation of a product. The apperception theory regards familiarity as important because through the associative process, memories are activated and included in the contents of mental representations (Saariluoma & Jokinen, 2014).

Similarly, when analyzing the mental representations of the video elements, we find subtle differences between Spanish and Finnish participants. Spanish verbalization is directed at reflecting the mental contents of the overall impression of the videos and the audios regarding aesthetic qualities ("*the video is colorful, it suggests calm, it is interesting,*" etc.). Likewise, Spanish participants represent mental associations and global contextual features (e.g., "*you wake up in the morning and breakfast is made...*"), also suggesting a global approach to the video contents. We interpret this more global approach of the Spanish mental representations of products and videos as reflecting the influence of cultural factors such as collectivism or restraint (Hofstede, 2010). This global approach to perception could also be associated with countries such as Spain, with higher scores in the collectivism dimension and lower ratings in restraint. This interpretation is in line with research showing that factors such as religious beliefs influence perceptions of global and local features of objects (Colzato, van den Wildenberg, & Hommel, 2008). Of course, this interpretation requires further investigation.

Despite these cultural differences, our results seem to indicate that videos and films provoke universal experiences in the viewers. First, the results from commercial images and videos (Articles 1 and 2) show a similar overall pattern for both Spanish and Finnish participants. As mentioned, our results also suggest that videos, relative to static images, reduce the differences between the mental representations of the commercial products so that both cultural groups start relying more on aesthetics, emotions, and impressions when video contents are introduced. This finding indicates that videos induce universal emotions that balance out other possible cultural biases.

Second, the universality of the emotional experience with videos is also corroborated when examining feature length films. Similar features appear in the emotional profiles of the three selected, culturally different films. They all show medium-score interest, as suggested by the data from the pressed buttons. They also reveal that the sequences that evoke more interest are those that portray a mixture of positive and negative valence emotions. Cultural differences are also negligible when comparing the answers to the questionnaire items regarding experiences and emotions when viewing each of the movies. The three movies elicit the same emotions and experiences despite their respective origins from three countries that widely vary in Hofstede's (2010) cultural dimensions.

Finally, the universality of emotions is also supported by comparisons among people with different levels of cultural openness (cosmopolitan orientations). Whether measured through their subjective interest in culture or actual experience in travelling and knowledge of languages, the participants' emotional experiences with the three films show little variations. Although speculative, we interpret our data's support for theories of universal emotions as possibly coming from two sources. First, some emotions are in fact universal, and videos with their aesthetic qualities have a better ability to elicit such emotions than other types of stimuli. Second, the narratives of the three films contain many archetypical events and characters. Some authors have proposed that characters such as the hero, the mother, the child, and the old man constitute symbolic elements inducing universal emotions (Chang et al 2013). In our view, this idea needs further investigation, but the fact that our selected movies depict many of these characters may provide some evidence for the proposal.

5.5   Social influences on video processing

Finally, the last point that we want to stress from our data is the need for video and film studies to explore the role of social factors, specifically age, when producing audiovisual contents. Although our data do not provide direct evidence for the influence of sociodemographic factors on culture and video processing, some indirect evidence leads us to think that individual differences might play a role in the videos' impacts on viewers' experiences. Thus, our data

on cultural cosmopolitanism suggest that people's cultural orientation makes them more prone to like and expect to like films of different cultural orientations. Similarly, when considering cultural differences in technologies, age is a mediating factor, with cultural differences being more pronounced for older people. Although these two findings are not directly related to our main arguments, they suggest that culture and age should not be neglected and that future research should investigate these factors if we really want to understand the roles that culture and contextual factors play in the success of a video or a film.

5.6   Limitations and Future lines of research

Our discussion on the differences between videos and static images, the contents of the mental representations of the videos, and the role of cultural factors in emotional experiences with the films, as well as our attempts to measure and define interest and other emotional experiences induced by the films, leave open many interesting questions that deserve further investigation. Although our data seem to suggest that emotional experiences with films are quite universal, some limitations of our studies make it necessary to undertake new research to be able to draw stronger conclusions. For example, although we have selected culturally different countries (according to Hofstede's [2010] dimensions) to conduct our observations, these countries come from occidental cultures where many values and forms of life are similar. Hence, an obvious line of research from our data is to directly compare emotions from many more different cultural orientations and larger variations in values, habits, and forms of life.

Second, a similar reasoning can be applied to the selected films since they all come from comparable Western countries, with highly shared values and aesthetics. Additionally, in our attempt to control the selection of films to be alike in most aspects but cultural background, we have picked films with similar topics, characters, and themes, and other genres and topics are possibly more open to cultural differences. As mentioned, archetypical events and characters seem to induce universal emotions, and our chosen movies are full of these types of characters. Thus, an interesting line of research involves looking for differences between genders and topics (Silvia, 2005a) when investigating cultural effects.

Third, individual differences in cultural background, age, and expertise might provide better insights into individual and social factors influencing emotional experiences with films. Expert studies in many fields have been highly influential in revealing mental representations that differ for knowledgeable individuals. Reports involving radiologists or chess experts show that perceptions (apperceptions) of objects change with experience. Similarly, cultural background, openness to new experiences, educational level, and age yield different results (Saariluoma et al., 2016). Cultural globalization is

a relatively new phenomenon that unevenly impregnates people's lives. Future research should explore the roles of these individual factors in film experience.

As illustrated in the last article, interest in individual differences and cultural factors can also be expected to produce social change. Thus, a fruitful line of research is to investigate what types of video contents can impact and change social stereotypes and open new professional perspectives to minorities by providing role models through video-content experiences.

Finally, a long-term project is intended to provide commercial video producers and filmmakers with guidelines for how to increase the success of their video products. What elements of the films and the videos heighten the viewers' interest, and how can it be maintained throughout the film? These guidelines should include the necessary interactions between the product and the viewer that would make videos and films successful.

Of course, our studies are also full of small methodological questions that might be addressed in future studies. For example, comparisons of Finnish and Spanish reactions to Finnish designed object confound familiarity and cultural background, so that further studies should try to separate out the role of these factors. Similarly, content analyses have been conducted with empirically derived categories that will need to be validated by future studies. But while these studies can be considered exploratory at the moment, they might provide the basis for future a priory categorization. Similarly, cultural comparison of people reactions to different culturally oriented films should be completed with parallel studies of people coming from other national backgrounds. Despite these methodological considerations, the studies in this thesis clearly show that industrial video contents and films can be analyzed with the tools coming from the users' design field. Combination of the questions and hypothesis coming from film and communication studies, sociology, cultural studies, cognitive science, psychology and users' design can provide a rich theoretical and methodological framework where many of the questions of video and film makers can be answered.

FINNISH SUMMARY

Elokuva on moniulotteinen ilmiö, ja monet sen ulottuvuuksista on jätetty tois-
taiseksi varsin vähäiselle huomiolle tutkijoiden piirissä. Elokuvat ovat tietenkin
taidetta ja viihdettä, joten niitä tarkastellaan ammattikriitikkojen tai teoreetikko-
jen toimesta. Audiovisuaaliset tuotteet ovat kuitenkin tärkeä osa myös nyky-
päivän tieto- ja viestintäteollisuutta, sosiaalista mediaa sekä digitalisoituvaa
liiketoimintaa. Tästä syystä on johdonmukaista käsitellä audiovisuaalisia tuot-
teita ja elokuvia kuten mitä tahansa muita teknologiatuotteita. On aivan järke-
vää kysyä, millaisen käyttäjäkokemuksen elokuva luo katsojille, ja tutkia tätä
ongelmaa käyttäjäkokemustutkimuksen menetelmien ja käsitteiden avulla.

Vaikka audiovisuaalisten teosten määrän kasvu on ollut huomattavaa, vie-
lä tänä päivänä tiedetään varsin vähän niistä komponenteista, jotka tekevät elo-
kuvasta mielenkiintoisen ja tunne-elämyksiä tarjoavan. Audiovisuaalisia tuot-
teita, kuten mainosvideoita tai kokopitkiä elokuvia, on haastavaa tutkia, sillä
tarkoituksensa saavuttamiseksi niissä yhdistellään monimutkaista viestintää
sekä monia taiteellisia elementtejä.

Merkityksiä ja tunteita luodaan eri elokuvallisia komponentteja kuten ka-
meranottoja, liikkeitä, kerronnallisia elementtejä ja musiikkia yhdistelemällä.
Nämä keinot kehittyvät jatkuvasti ja niitä hyödynnetään, kun halutaan vaikut-
taa yleisöön ja lisätä viestin sisältöjen kiinnostavuutta. Elokuvan tekijöille on
kuitenkin tärkeää saada selvä kuva eri ratkaisujen vaikutuksista yleisöön. Tä-
män johdosta tässä väitöskirjassa hyödynnetään erityisesti käyttäjäkokemustut-
kimuksen kehittämiä menetelmiä käyttäjien elokuvakokemuksien tarkastelemi-
sessa. Niiden avulla on mahdollisista saada selvä kuva siitä millaisia ovat käyt-
täjien tunteet ja tunnekokemukset elokuvaa katsottaessa.

Väitöstutkimuksessa yhdistetään eri menetelmiä katsojien mielen- ja tun-
nesisältöjen kartoittamiseksi. Kvalitatiivinen analyysi yhdistetään kvantitatiivi-
siin tietoihin. Tunnekokemuksen sisältöjä tutkitaan myös uusi menetelmä, jon-
ka avulla voidaan seurata katsojien kiinnostusta ja tunnearvoja reaaliaikaisesti
elokuvan katsomishetkellä.

Tutkimuksen taustalla on tunnesuhtautumista (appraisal) koskeva teoreet-
tinen viitekehys. Yhdistelemällä tunnesuhtautumista koskevaa tutkimusta ja
käyttäjäkokemuksen teorioita voidaan saada selkeämpi kuva elokuvan emotio-
naalisesta vaikutuksesta. Tähänastiset tulokset viittaavat siihen, että tuotteen
emotionaalinen vaikutus on kontekstuaalisesti välittynyt, riippuu käyttäjien
tavoitteista ja uskomuksista sekä kulttuurisista stereotypioista.

Viimeaikaiset tutkimukset viittaavat siihen, että estetiikka ja visuaalinen
muotoilu välittyvät eri tavalla kulttuurista riippuen; elokuvantekijät olettavat
kuitenkin, että tunteet ovat yleismaailmallisia, ja elokuvan eri piirteet vaikutta-
vat samalla tavalla kulttuuriltaan erilaisiin katsojiin. Tässä väitöskirjassa empii-
risten tutkimusten tarkastelu tukee seuraavia päätelmiä: 1) espanjalaiset ja
suomalaiset katsojat kokevat eri tavoin kulttuurisesti latautuneet elokuvat. 2)
eri seikat videoissa näyttävät vaikuttavan katsojiin eri tavalla heidän kansalai-
suudestaan riippuen, 3) videokuva näyttää kuitenkin poikkeavan staattisista

kuvista, 4) Lopuksi näyttää siltä, että emotioita aktivoivat kohtaukset voivat olla ylikulttuurisia. Tämä havainto viittaa siihen, että elokuvissa on kulttuurisia tunnestereotypioita tasapainottavia yleismaailmallisia tunteita.

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IV

EMOTIONAL EXPERIENCES OF FILMS: ARE THEY UNIVERSAL OR CULTURALLY MEDIATED

by

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EMOTIONAL EXPERIENCES OF FILMS: ARE THEY UNIVERSAL OR CULTURALLY MEDIATED

Jose Cañas-Bajo, Teresa Cañas-Bajo, Eleni Berki, Juri-Petri Valtanen, Pertti Saariluoma

Abstract

Dominant stands consider that films elicit universal experiences. However, data from audio-visual design suggests that the cultural background of the audience influences film perception. In this paper, we explored whether emotional experiences of films are culturally mediated. First, we compared the emotional experiences of a Spanish audience when viewing culturally different films matched in genre and topic. Second, we compared the experiences of two groups differing in cultural orientations when viewing the films. Our aim was to investigate if cultural cosmopolitanism, people interest for other cultures, influences their experience of culturally loaded films. We captured viewers' experiences by means of an on-line voting system where viewers indicated the more interesting scenes, and by means of an off-line questionnaire that qualified participants' voting responses. Results showed very few differences between films and groups, suggesting that, some emotions seem to be universally experienced by some aspects of the films.

Keywords

Emotional experiences, Film audiences, Interest, Universal emotions, Cultural diversity, Cosmopolitan orientation.

Introduction

For a number of years some researchers have tried to understand the elements and features that make a film interesting for the audience (Silvia & Berg, 2011; Tan, 1996; Tarvainen et al., 2014). Thus, some aspects of the narrative, the acting, the visual composition and musical elements may interact to produce emotional experiences in the viewers. An essential property of films is their power to produce emotional reactions despite the fact that viewers know that the scenes they are presented with are not reality but fiction. Our experiences of films seem to depend on our emotions, and it is therefore, critical to ask how do the general properties of human emotions affect our films experiences, and how can we explain properties of film experience on the ground of the general properties of human emotions. Of course, understanding film experiences and emotional reactions to films is a lifelong project that goes far beyond a single study. Hence, in this paper we address a more specific problem as we aim to analyse on-line emotional experiences of full scripted films to explore the extent to which these experiences contain universal properties or are culturally mediated. From this view, we indirectly address the classic problem of the universality versus diversity of emotional processing (Darwin, 1872; Ekman, 1973).

Arguments in favour of the universal view of emotions comes mainly from studies showing that many different cultures have similar ways of naming and recognising emotions; the words happy, surprise, fear, disgust, anger, or sad are present in all languages; they are expressed using the same facial movements, and they are similarly recognised across cultures (Ekman, 1973; Ekman, Friesen, & Ellsworth, 1972; Izard, 1977). This point is important for the film industry as it suggests that our emotional experience of films could be, in part, culturally universal, and that it might be possible to find cultural universals for the emotional language of film. In fact, cinematographic resources for conveying meaning and emotions are usually described by film experts as universal norms. Thus, it is easy to read about specific ways of using the camera to convey emotions, the angle you use, the frame composition, the distance, etc. are explained as ways to induce emotional specific experiences (Brown 2003; Nielssen, 2005). For example, the following description of ways that perceptual film phenomena produce emotions from Tan (Tan, 1996) *"...film has a distinct advantage when spatiotemporal aspects of the stimulus are major causes of emotion. The sight of a giant spider in a film evokes more fear than do the words 'giant spider' in a written narrative. Furthermore, proximity of a negative event, a cause for fear, has a one-to-one correspondence to the spatiotemporal aspects of the film stimulus"...* reflects the idea that perceptual phenomena universally evoke specific emotions. From this view, video producers and filmmakers have expert knowledge of the effect that different angles, distances, movements, etc. have on the emotional experiences of the viewers. This relates to recent approaches that have borrowed the users' experience approach to investigate audio-visual products (Silvia & Berg, 2011; Tarvainen et al., 2014). The idea is to identify features of the audio-visual product that have the desired impact on the audience. The aim is to "design" films and audio-visual products that enhance the overall experience of the viewers including their thoughts, perceptions, or feelings by including perceptual and technical features that elicit them.

However, although this approach may prove useful to identify common elements that raise interest and evoke emotions in the general audience, it is possible that people with different cultural backgrounds and cultural experiences may influence the way film contents and perceptual features impact the audience. In fact, basic research and theories have questioned the universality of emotional recognition, since even the studies showing similarities across cultures, have also shown some cultural variations in the way facial expression and basic emotions are recognised (see (Mesquita & Frijda, 1992) for a review). Recent models emphasize that emotions occur in social interactions and they serve specific function within a context. From this, emotions can be culturally diverse since some will be more

frequently experienced than others within a given culture, and they might also show some variations depending on personal experiences and context (Boiger & Mesquita, 2012). Although some researchers have taken extreme positions, the general view is that theories need to accommodate some degree of universality and contextual variations and that they should try to specify which components of emotions are similar or diverse across cultures and contexts (Mesquita & Frijda, 1992; Russell, 1994; Scherer & Wallbott, 1994).

This basic view can also be applied to films and audio-visual products. Thus, it is possible that a film product developed in a country and a cultural context does not have the same impact on the users of another country or culture. In the field of design this seems to be an important concern. Although, it is possible to find some features that users may generally consider usable and attractive (e.g., designs that follow the laws of Gestalt), many factors seem to be strongly influenced by cultural values (Ito & Nakakoji, 1996). Studies looking at cultural factors across nationalities and within national cultures have identified dimensions in which people differ. For example, Hostfede (Hofstede, 2010) have identified six cultural dimensions in which people from different countries differ: Power distance, Individualism vs. Collectivism, Uncertainty avoidance, Masculinity vs. femininity, Long-term orientation vs. short-term orientation, Indulgence versus restraint. These dimensions may also have an effect on how people experience and react to films and other audio-visual products. Similarly, films produced in different countries may reflect different values along these dimensions and may be perceived differently by people from other national background(Hofstede, 2010).

Similarly, recent research also suggests that within a country, people with apparently similar cultural background, may differ in their cultural habits, and in their openness to experience and the frequency of consuming foreign product and habits (Cleveland et al., 2009; Hannerz, 1990; Skrbis and Woodward, 2007; Szerszynski and Urry, 2002; Woodward et al., 2008). This openness to foreign culture has been termed "cosmopolitan orientation", and it is usually accompanied by a tendency to experience cultural products and services and to travel and visit foreign countries. This orientation might, therefore have an influence in the type of elements that people find interesting or moving within a film, or they might influence whether they find interesting cultural-foreign elements within a film. For example, a recent study by Savage and Meuleman (2013) analysed the geographic range of cultural and aesthetic tastes for films, books and music in Dutch participants and found different dimensions that determined people preferences. One dimension went from people with high interest in all cultures (national and transnational) and with very culturally engaged habits, to people with local tastes and very disengaged of cultural habits. Another dimension went from preferences for U. S. American popular culture to preferences for European culture. Finally, the third dimension went from people who preferred exclusively Dutch product and cultural products to people who preferred any other combination of cultures. Some of these dimensions are related to education and age (e.g. like for American products), but they also seem to reflect forms of relating to culture that vary in terms of engagement and openness. From, this perspective, it makes also sense to study individual differences in film preferences as they relate to people cultural orientation.

Our aim in this paper is to address the question of whether film experiences reflect universality, contextual variation or a mixture of both. We approach this question from two different perspectives. The first way of studying the effect of cultural background on film experiences is to show films with similar themes, but different cultural origin to people with the same cultural background and observe if there are differences in the way they experience the films. If we observe difference in the way culturally different films are experienced, we would get evidence for culture specificity of emotional experiences. Cultural specificity will be reflected by showing differences in interest and emotional reactions to films

that are either from the same or from different cultural background than the audience. If we do not find differences, it would suggest that the emotional language of films has some universal bases. The second way of studying the impact of cultural factor on film experiences is to look at individual differences on cultural orientation (cosmopolitan orientation) and to investigate whether this orientation influences the emotional experiences of the films. An obvious assumption for this second approach is to think that people with more opened forms of life (cosmopolitan orientation) would be more tolerant and positive to films coming from different countries with cultural elements different from their own.

The methodological approach of the study is to combine quantitative and qualitative data to compare films of different cultural background and to assess individual differences depending on cultural orientation. Our aim in this paper was to use our recently developed "quantitative voting method" (see Cañas-Bajo et al., submitted) and combine it with qualitative data (questionnaires and interviews) to assess differences in film preferences for people with different cultural orientations. As we are interested in understanding factors, which increase the success of films, the users' experience approach was used to analyse aspect of culturally different films. In the study, we assessed *interest* as a complex critical emotion that may determine the success of a film. Interest was captured on-line by asking participants to press a key whenever they thought their interest was raised by a particular scene while they were watching a film. They were also asked to provide the emotional valence of their experienced interest (the system uses two different buttons to signal positive and negative emotions). The number of presses to the buttons provided online indexes of interest and emotional valence. We decided to ask participants for both Interest and emotional valence since these two forms of appraisal occur simultaneously in most film viewing situation. Previous research have shown that interest and emotional valence are independent appraisals (Turner Jr & Silvia, 2006), although they are related in complex ways (Tarvainen et al., 2014). In addition, viewers' experiences were qualified by asking off-line to rate their experience of some movie components (narrative, visual, music, characters, etc.) and by providing rating reflecting the extent to which they felt specific emotions (happy, sad, anger, surprise, etc.).

Methodology

The study consisted of a single session with three phases. In the first and third phases of the study, participants were asked to fill out questionnaires regarding the movie they would see (first phase) or they have just seen (third phase) and different aspects of their cultural orientation. In the second phase, participants watched three movies and were asked to indicate through a voting system (see below) the sequences that they thought interesting and critical for understanding the film. All participants were involved in a single session where they filled out the questionnaires and watch the films. However they were distributed in six groups with different schedules (according to the participants' availability) and with different order of presentation of the movies.

Participants. A group of 59 Spanish participants (22,7 mean age, 3,01 Sd, 36 women and 23 men) took part in the study. Participants were recruited by posting a Facebook announcement in which the purpose and the procedure for the study was explained. In addition, they were offered the possibility of choosing among different dates and schedules since they would be presented with three full-scripted films along a full day. They were informed that they would have to watch the three films but after presentation of each film there would be a break where they would be offered food and beverages. Participants were distributed in six groups of 5 to 18 participants. We excluded participants who work in film industries as well as students of films, audiovisuals, communication studies, etc.

Materials. We selected three films that differ in the country where they were produced and in the language they were presented, however they shared the genre (drama) and main theme (children of war). The selected films were "The Empire of the Sun" (US), "Ispansi"(Spain) and "Mother of Mine" (Finland). We selected these films since they have survived the test of time in their respective countries. In addition, they all convey positive and negatively balanced emotional experiences, and therefore they are suitable to assess their emotional profile. The Finish and US films were played in Finish and English respectively with Spanish subtitles so that participants would be able to understand the dialogues. An additional reason to select these films is that they came from countries that differ according to many of Hofstede's cultural dimensions. Thus Spain seems to differ from Finland and United States in a number of dimension such as individualism, uncertainty avoidance and indulgence (Hofstede, 2010; Morden, 1999; Van Everdingen & Waarts, 2003). These differences in cultural dimension are probably reflected in national films and may be perceived differently by people from different cultures.

Procedure

As mentioned, participants took part in a single session (from 11 am to 7pm) where they watched three different films and fill out questionnaires.

Questionnaires. Before and after watching the movies, participants were asked to fill out three questionnaires with questions regarding the participants' background, their expectations before watching the movies and their experiences and emotions while they were watching the movie.

Two of the questionnaires were offered before watching the films and we gathered information about the demographic features of the participants, their interest about other cultures and their knowledge and interest in cinema. The purpose is to be able to evaluate if cultural or demographic aspects of the participants can underlie obtained results. With this aim, we adapted the questionnaire by Silvia and Berg (Silvia & Berg, 2011) to assess participants' knowledge and interest in films in a scale ranging from 1 (low interest) to 5 (high interest). Regarding the cultural aspects we address the following questions to participants: *How interested are you in learning about cultures different from yours? What is your level of spoken English compression? How many times have you travelled abroad in the last five years? How many different countries have you visited?*

The second questionnaire aimed to capture the participants' expectation about the movie before watching it and after reading a brief synopsis and other technical aspects of the movie. Hence, before each film was presented, they were asked to read a summary of the film and to answers some questions regarding their expectancies about the film (10 minutes). Then, they watch the film, and they were asked to fill out a questionnaire regarding the experiences and emotions elicited by the film.

The third questionnaire aimed to evaluate the participant´s final experience of the whole movie as well as the specific aspect related to it (plot, acting, visual composition, music...), and therefore was offered after watching each movie. This questionnaire contained three open questions in which participants were asked to explain what aspects of the movie they have liked the most and the least and which elements they considered could be improved in the movie. The purpose of this last questionnaire was to use Content Analysis of the participants' responses to identify features of the movies that might differ in importance for the audiences of different cultural background and to see how these features are present in the scenes extracted by the voting system.

Watching the film and voting. In the second phase of the study, people were asked to signal the sequences in the film that raised their interest and they thought were central for understanding the film. For this we used a voting system consisting of two sticks with a bottom at the end that participants could press to signal the sequences they thought critical (See Figure 1). Participants were asked to hold the sticks in their hands and to press the button if they thought the sequence was critical an interesting. In addition, they were instructed to press the right or left button to indicate a positive or negative valence-reaction (the hand for positive and negative responses were counter balanced across participants). This voting system was synchronized with the movie and the participant were asked to press either of the two bottoms every time they consider the sequence critical for the final experience of the movie. The system recorded the participants' responses so that we it was possible to identify the critical sequences by looking at the frequency of responses (critical sequences were those with more bottom press) and whether the overall valence for these critical sequences was negative or positive. The advantage of this voting system is that allows capturing participants' emotional responses with minimum disruption of attention to the movie. Reliability and validity of the data from this voting system has been discussed elsewhere (see Cañas-Bajo, et al., in press).

Figure 1. *Picture of the stick for the voting system.*

Data Analyses

As we mentioned, we approached the question of cultural biases on film emotional experience from two different approaches. First, we wanted to explore whether films from different historical and cultural background would produce different emotional experiences in culturally similar participants. With this purpose the first set of analyses compared the experiences of the whole sample of participants to each of the depicted films. Second, we wanted to explore if individual differences on cultural orientation (cosmopolitan orientation) influenced emotional experiences of the films. Sections A and B of the results addressed each of these questions.

Results

A. Comparison of films' emotional profiles for participants with the same cultural background when experiencing culturally different films .

In order to operationalize and measure the *interest* raised by the films as they unfold on time, we performed analyses on the number of button presses per sequence (see Cañas-Bajo et al., Submitted) for

a similar approach. For the analyses, we divided the movies into sequences and coded the number of registered presses by participant and sequence. We then normalized the data by calculating absolute Z-scores (larger scores represent more presses) for each participant and calculated the mean average score for each scene, and we plotted them to visualize the overall interest of the movie as the sequences unfold.
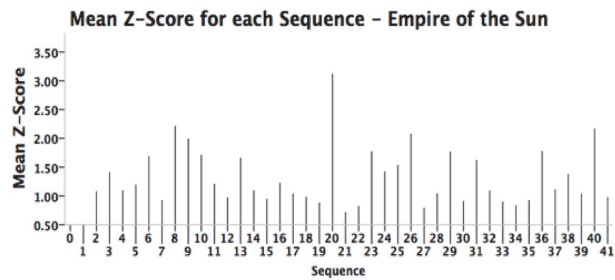

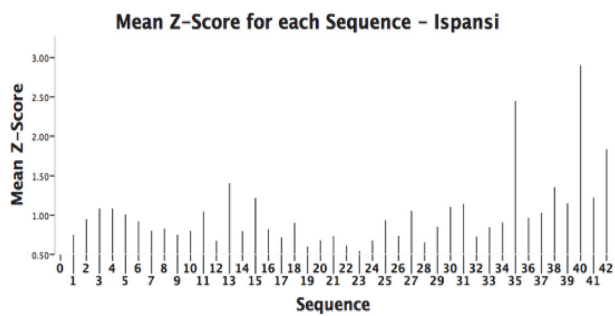**Figure 2**. *Mean Z-scores for each sequence for the "The Empire of the Sun"*

Figure 3. *Mean Z-scores for each sequence for the "Ispansi"*
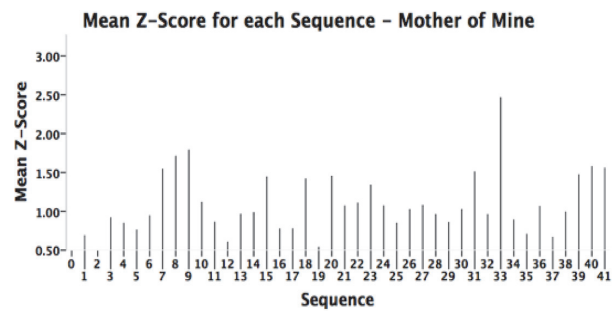
Figure 4. *Mean Z-scores for each sequence for the "Äidesitä parhain"*

Panel a, b and c in Figure 1 represents the mean Z-scores for each sequence for the "*The Empire of the Sun*" (EoS), *"Ispansi"* and *"Mother of Mine"* (MOM) movies, respectively. This voting data was used to obtain an emotional profile of the movie across time. Overall visual inspection of Panels a,b,c in Figure 1 provides a time x interest profile for each film. This profile reflects the peaks and valleys of interest as the films unfold on-time. Thus, the *EoS* shows high levels of interest across the whole movie with peaks in the central and last part of the movie. In contrast, *Ispansi* only raised high levels of interest in the last part of the movie with all the peaks located toward the end. *Mother of Mine* shows a mixed pattern with some raised interest in the first middle part but with the larger peaks toward the end.

In order to characterize the distribution of Z-scores reflecting film interest, we plotted the mean scores per sequence and displayed the frequency of Z-scores across sequences. **Figures 5, 6 and 7** shows the distribution of scores for each film.

Figure 5. Frequency distribution for Interest Z-scores the "Empire of the Sun"

Figure 6. Frequency distribution for Interest Z-scores the "Ispansi"

Figure 7. *Frequency distribution for Interest Z-scores the "Mother of Mine"*

As can be seen in Figure 3, the overall profiles for the three films are very similar and skewed toward low scores. This pattern suggests that onl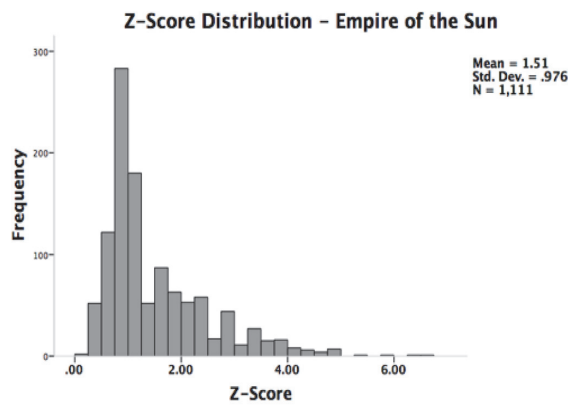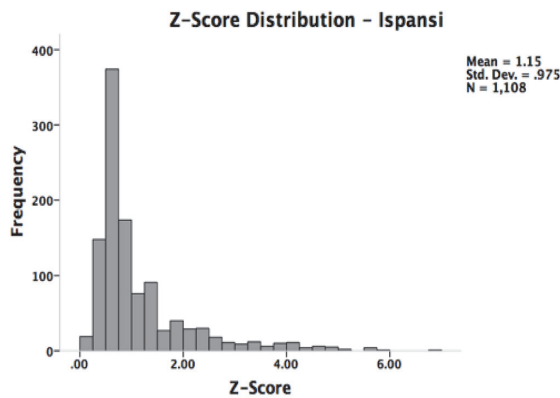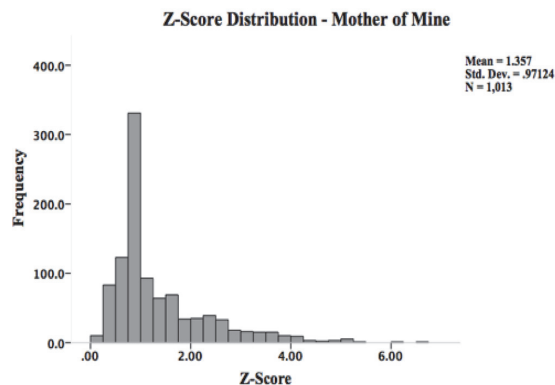y a few sequences increase the overall level of interest for the three films. In order to compare overall interest of the movies, we performed an Analysis of Variance (ANOVA) to assess possible differences in overall interest among the three films. The results of the ANOVA were not significant, F (2, 114) = 1.040, p = 0.33, indicating that, overall, participants were similarly interested in the three movies. Hence, participants' overall experiences appeared not to differ depending on the cultural background of the countries where the movies were produced.

Visual inspection of the figures (see Figure 1, panels a, b and c) clearly indicates the sequences that are considered as more interesting by the viewers. Hence, we examined the content of some of these sequences for the three films.

For *EoS*, sequence number 20 in the central part of the movie was the most interesting sequence according to the participants. This sequence corresponds to the moment that the main character (the child interpreted by Bale) arrived to a concentration camp in China. It is a moment that elicits a strong sad emotion that contrasts with the joy of the child when believing that he was in an air base plenty of war airplanes which he loved. The amount of opposing emotions mixed with the late motif of the soundtrack and a beautiful composition of the picture makes this sequence very interesting and intense for the audience. In contrast, sequence 21 was considered the least interesting by the audience (the lowest mean score). This sequence consists of an interaction between the child and a Japanese teenager, which at this point seems not too central for the plot (although it would have more importance later on in the movie).

For *Ispansi* sequence number 40 was the more voted sequence by the audience and consisted of the return of one of the main character to Spain after her odyssey in Russia during the World War II, and the reunion with her brother. She belongs to a family, which supported Franco´s army, but in Russia she was living with the exiles of the republican side. So, she had to change her mind in different ways as she was exposed to different perspectives of the war. The dialogue of the siblings turns into a debate about politics and the consequences of the war. Also, the sequence is a summary of the plot during the whole movie and it is highly loaded with emotional content. In contrast sequence number 19 was considered as the least interesting by the audience (as reflected by its low score) since it introduced a small detail in

the plot (a secondary character suspected by the main character not to be in the republican side of the conflict).

Finally, sequence (33) was voted as the most interesting sequence for *Mother of Mine*. This sequence corresponded to the first moment in which the mother and the adopted child have a good relationship. Hence again this sequence had a strong complex emotional content as the relation changed from negative to positive. Possibly, this sequence is the happiest (and probably unique) part of the movie. In contrast, sequence 19 was the least interesting for the participants and, during the sequence you can see the kid building a small boat with wood while the father explains to him the difficulties that this boat will have in the Baltic-sea. This sequence is not relevant for the development of the main plot, although is there to reflect the easy relationship between the father and the kid.

These more qualitative analyses of the most and least selected sequences based on the sequence content seem to support the idea that interest is usually raised by complex scenes where negative and positive emotions are intermixed (Silvia & Berg, 2011; Tan, 1996). Interestingly, this pattern was true for the three films, so that independently of their national background the sequences raising most interest in the viewers were characterized by a mixture of positive and negative emotions and by highly loaded content, suggesting that "*interest*" might be a universal emotional reaction elicited by complex cognitive and emotional stimulus and events.

Overall analyses of questionnaires

Experience of the film. To assess their actual experiences of the films, after watching each movie, participants were asked about their overall experience of the film. Thus, they were asked to rate in a scale from 1 (low) to 5 (high) to what extent they found the film interesting, if they thought it entertaining, and some more specific aspect regarding the quality of the script, visual composition and music. Mean scores and standard deviations on these scales for each movie are summarized in Table 1.

Table 1. *Means and standard deviation for each film in each of "experience" questions. Scores reflect responses in a scale from 1 (low) to 5 (high).*

	EOS	ISPANSI	MOM
Interest	2.27(1.13)	3.10(1.27)	2.14(1.31)
Entertaining	2.53(1.10)	3.31(1.10)	2.51(1.37)
Quality (Script)	3.59(.93)	2.42(.85)	3.24(.93)
Quality (Visual Composition)	3.80(.84)	3.12(.95)	3.78(.79)
Quality (Music)	4.15(.91)	3.51(.93)	4.14(.92)

We also performed within-participants ANOVAs looking at the differences among the three movies in each of the experience scales, and the results of these analyses showed no differences among them in any of the judged dimensions (all ps > .05). As can be seen in Table 3 participants' experience of the

films was moderate in the sense that in most dimensions they rated the movies around the middle point of the scale or somewhat below it, only visual composition and music were rated above the midpoint of the scales. Importantly, this pattern uniformly applies to the three movies that showed similar scores for rated experienced.

Emotion elicited by the films. Participants were also asked about the emotions elicited by the movies after watching them. Table 2 summarizes mean scores and standard deviations of each scale for each movie.

Table 2. *Means and standard deviation for each film in each of emotional experience questionnaire. Scores reflect responses in a scale from 1 (low) to 5 (high).*

	EOS	ISPANSI	MOM
Positive Feelings	3.09(.79)	2.29(.79)	2.90(.72)
Surprise/ curiosity	2.96(1.07)	2.82(.95)	2.82(.91)
Sadness	3.20(1.07)	2.68(1.00)	3.71(1.02)
Boredom	2.22(1.11)	2.95(1.20)	2.19(1.16)
Disgust	1.32(.60)	1.76(1.15)	1.20(.52)
Anger	1.88(1.11)	1.86(.99)	1.85(1.12)
Fear	1.71(.79)	1.65(.76)	1.59(.68)

We also performed within-participants ANOVAs looking at the differences among the films for each of the emotion scales. The results of these analyses showed again no differences among the three films in any of the emotional dimensions (all ps > .05). As can be seen in Table 4 participants experienced positive feelings, curiosity, sadness and boredom to a larger extent than other more extreme feelings such as disgust, anger or fear. These larger scores for moderate emotions might correspond with the participant's moderate ratings regarding their experience of the movie as moderately interesting and likable. Again, the more important point is that the pattern of emotions was similar for the three films.

Content analyses of viewers' verbalizations. In order to assess more qualitative aspects of the viewers' experiences that might not have being captured by the more specific expectancy, experience, and emotion questionnaires, we analyzed the open verbalizations to the questions where participants were asked to explain what aspects of the movie they liked the most and the least. We performed content analyses of the participants' verbalizations as described by Weber in his book "Basic Content Analysis" (Weber, 1990). The approach for the content analysis was data-driven because the focus was to identify the elements and properties of the films that raised the interest on the audience. We identified semantic units and categorized them into broader categories. Table 3 shows the recorded number of elements within each broad category (Narrative, Acting, Visual Composition, Music, Time and Rhythm).

Table 3. *Number of written verbalizations from the questionnaire responses for each film in identified broad category.*

CATEGORY	POSITIVE RESPONSES			NEGATIVE RESPONSES		
	EOS	ISPANSI	MOM	EOS	ISPANSI	MOM
Narrative	26	22	22	17	20	21
Acting	3	1	5	3	13	1
Visual composition	5	8	7	4	0	5
Music	2	2	0	2	1	1
Time & Rhythm	0	0	0	10	0	3

"Narrative" referred to verbalizations regarding elements of the plot, characters, dialogues, historical moment, or evaluating the quality of narrative features; "Acting" referred verbalizations regarding aspects of the actors' interpretation, "Visual composition" represented verbalizations regarding characterization, makeup and settings, and "Audio composition" referred to verbalizations regarding the music and voice-over. Inspection of Table 5 indicated that Narrative was the most frequent category in the viewers' answers. Most importantly, again with few exceptions, the distribution of the participants' verbalizations was very similar for the three films.

To further explore possible differences among the movies, we conducted a further categorization using Tan's (Tan, 1996) proposal of two types of viewer emotions depending on the object of appraisal. The first of this type of emotion is Fictional and includes fear, sympathy and joy provoked by the illusion of being physically present in the fictional world offered by the film. The second type of emotion Tan's termed "Artifact" to reflect viewers' awareness of what they are seeing and their emotion are provoked by an artifact. The later will include comments regarding enjoying the movie, the acting, aspects of the music etc.

Table 4. *Number of written verbalizations from the questionnaire responses for each film in Fictional and Artefact categories (Tan, 1996).*

	POSITIVE RESPONSES			NEGATIVE RESPONSES		
	EOS	ISPANSI	MOM	EOS	ISPANSI	MOM
Fictional	9	15	12	9	16	10
Artifact	21	14	19	18	11	19

Table 4 shows the distributions of participants' verbalization regarding these two broad categories. As can be seen the distribution of the responses is very similar across films, with the interesting exception the *EoS* has many more verbalization regarding Artifacts. This is interesting because this difference seems more related with the fact that *EoS* is a big production with an expensive budget, while *Ispansi* and *Mother of Mine* are much lower cost productions than with actual cultural features that will be probably be related to Fictional aspects.

In summary, the data analyses performed on the participants' expectancies and experiences of the movies both on-line (through the voting system), or off-line (through questionnaires and open questions), seem to suggest that our participants with a similar Spanish-culture background, perceived and experience the three culturally different movies in similar manners. The next set of analyses sought to explore whether the participants' cultural orientation influenced their expectancies and experiences of the three culturally oriented films.

B. Comparison of Cultural Interest and Travelling in perceived experiences of culturally different films

To assess cosmopolitan orientation of our participants, we analyzed the demographic questionnaire which included not only questions regarding demographics features of our sample, (e.g. age, level of education, nationality, etc.), but also a series of cultural items regarding interest in other cultures (from 1 to 5), knowledge of English (from 1 to 5), amount of travels abroad and number of countries visited (see (Silvia & Berg, 2011). In order to understand whether the four cultural questions in this questionnaire were reliably measures of the same latent variable (interest in other cultures), a Cronbach's alpha was run on the sample of 59 participants in the study. The results showed a high level of internal consistency (.678). A Principal Axis Factor (PAF) with a Promax rotation of the 4 Likert scale questions from this attitude survey questionnaire was conducted on data gathered from 59 participants.

An examination of the kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable (KMO=.690). The results of the analysis yielded two factors after three convergent iterations. We termed Factor 1 *Intended Cultural Interest* since the only variable with high load in this factor was *Interest in other cultures* (.99). *English knowledge* had a weight of .31, while *Number of countries visited* and *Frequency of travelling* loaded -20 and 0.05, respectively. Hence, this factor reflects cultural interest regardless participants' objective knowledge of other countries. We termed Factor 2 *Objective Cultural Interest (Travel and English)* since the variables with high load in this factor were *Number of countries visited* (.98), *Frequency of travelling* (.87) and *Knowledge of English* (.69). Hence, this component seems to include variables that indicate objective knowledge of other countries and cultural elements. The dissociation between these two factors is interesting since they reflect different aspects of cultural openness (see Goldberg et al., 2016 for other dissociations): the first more theoretical and subjective based on the participants own perception of their interest in other cultures; the second, more objective, since it includes actual behaviors such as travelling and language knowledge that clearly reflect exposure to other cultures.

Because cosmopolitan orientation was more objectively captured by exposure to other countries and languages, we are reporting here the data regarding individual differences in this factor[1]. Since we wanted to explore whether cosmopolitan orientation influenced the expectations, experiences and emotions elicited by the films, we classified participants in two groups according to their scores in the factor and include groups as factors both when analyzing Z-Scores from the voting system, and the

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[1] We also performed analyses on the cultural interest factor that yielded similar effects

results of the questionnaires. The first group corresponded to those whose scores lied below the 25th percentile (16 participants), the second those who lied above the 75th percentile (14).

Overall interest: on-line voting

In order to measure the overall interest raised in each group for each film, we performed analyses in the transformed Z-Scores for number of button presses per sequence (proxy of overall interest) with Film and Group as independent variables. The results of the ANOVAs yielded no significant difference among the overall interest of the films, Group or their interaction (all $ps > .05$). Figure 4 reflects the interest distribution of the film for each (low and high group) for each film and cultural dimension. Inspection of these figures show that there is a large overlap on the sequences that produced interest in the different groups. Hence, again these analyses suggest that there are similar patterns in the experience of the films independent of the participants' cultural orientation and the film.
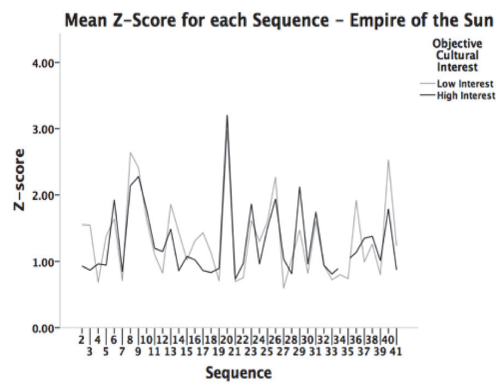

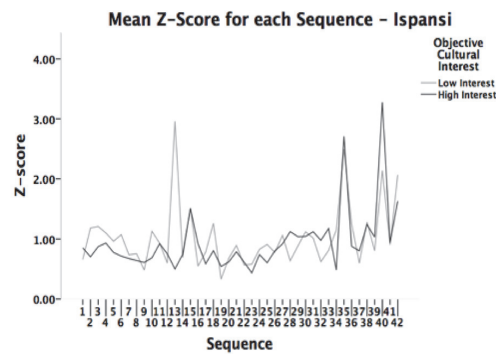*Figure 8.* Mean Z-scores for each sequence and culturally oriented group for the "The Empire of the Sun".

Figure 9. Mean Z-scores for each sequence and culturally oriented group for the "Ispansi".
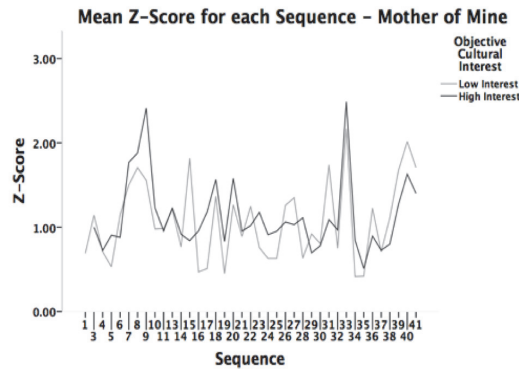
Figure 10. *Mean Z-scores for each sequence and culturally oriented group for the "Mother of Mine".*

Experience of the film. We performed mixed model ANOVAS with Film and Group as factors for each of the dimension. The results of these analyses revealed a main effect of Film on the dimensions *Interesting,* $F(2, 56) = 5.21$ $p < .01$, *Entertaining,* $F(2, 56) = 4.11$ $p < .05$, *Script,* $F(2, 56) = 14.69$ $p= .00$, and *Visual Composition,* $F(2, 56) = 9.33$ $p=.00$. Post hoc comparisons indicated that there were significant differences in the *Interesting* dimension between *Ispansi* and MOM ($p < .05$), with lower scores for the latter. As for *Entertaining*, the only significant difference was between *EoS* and *Ispansi* ($p < .05$), with lower scores for the first. For *Visual Composition*, *Ispansi* was significantly lower than both *EoS* ($p < .05$) and MOM ($p < .05$). The main effect of group was only significant in the *Interesting* dimension Group, $F(1, 28) = 5.15$ $p < .05$ showing a tendency by the high group to find the three movies less interesting than the low group, but more importantly, the interaction between group and film was not significant ($p > .05$)

Table 5. *Means and standard deviation for each film in each of experience questionnaire as a function of Travel & language. Scores reflect responses in a scale from 1 (low) to 5 (high).*

	LOW CULTURAL INTEREST			HIGH CULTURAL INTEREST		
	EOS	ISPANSI	MOM	EOS	ISPANSI	MOM
Interesting	2.60(1.29)	3.20(1.26)	2.40(1.55)	1.73(.88)	2.47(1.3)	1.73(.96)
Entertaining	2.60(1.12)	3.20(1.32)	2.60(1.59)	2.07(.88)	2.93(.79)	2.47(1.12)
Quality (Script)	3.67(1.11)	2.47(.91)	2.60(1.59)	3.67(.72)	2.53(.74)	3.27(.96)
Quality (Visual composition)	3.67(1.04)	3.07(1.1)	3.20(.94)	4.00(.66)	3.20(.86)	4.00(.65)
Quality (Music)	4.13(1.06)	3.53(1.06)	3.73(.96)	4.13(.74)	3.93(.46)	4.00(.84)

Emotions elicited by the films. As before, we performed mixed model ANOVAs with Film and Group as factors for each of the emotional dimensions in the questionnaire (see table 6) .The results of this analysis showed main effects of Film in *Positive Feelings,* F(2, 56) = 10.17 *p* < .01, and *Surprise,* F(2, 56) = 6.60 *p* < .01with lower scores for *Ispansi* than for *EoS* (*p* < -001) and MOM (*p* < -05). There was also a main effect of *Sadness,* F(2, 56) = 8.35 *p* < .01 with post hoc comparisons revealing that MOM had significantly higher scores than Ispansi. Similarly, *Film* was significant in the *Boredom* dimension, F(2, 56) = 5.39 *p* < .01, with *Ispansi* showing higher scores than *EoS* (*p* < -05) or MOM (*p* < -05). But, the main effect of Group and its interaction with film was not significant for any of the dimensions.

Table 6. *Means and standard deviation for each film in each of emotional experience questionnaire as a function of Cultural Interest. Scores reflect responses in a scale from 1 (low) to 5 (high).*

	LOW CULTURAL INTEREST			HIGH CULTURAL INTEREST		
	EOS	ISPANSI	MOM	EOS	ISPANSI	MOM
Positive Feelings	3.20(.80)	2.38(.97)	3.02(.92)	3.45(.62)	2.68(.69)	3.02(.57)
Surprise/curiosity	2.97(.95)	2.26(.88)	3.20(1.12)	3.33(1.13)	2.60(1.07)	2.97(.64)
Sadness	3.33(1.11)	2.70(1.25)	3.77(1.24)	3.57(.90)	3.23(.86)	3.93(.92)
Boredom	2.13(1.12)	2.93(1.28)	2.13(1.30)	2.00(.75)	2.80(1.08)	2.00(.84)
Disgust	2.13(1.12)	1.93(1.28)	1.87(1.12)	1.87(1.06)	1.80(1.01)	2.13(1.18)
Anger	2.13(1.15)	1.73(1.10)	1.87(1.30)	1.93(1.22)	2.00(1.06)	2.33(1.17)
Fear	2.13(1.13)	1.70(.96)	1.60(.81)	1.90(.89)	1.70(.88)	1.80(.73)

Discussion

Our aim with this study was to explore the extent to which emotional experiences when viewing full scripted films contained universal properties or, on the contrary, were culturally mediated. In line with Universalists positions regarding emotional processes (Ekman, 1973), film experts implicitly discuss many of the cinematographic resources and techniques (frame composition, distance, angles, etc.) as universal ways of conveying specific emotions (Brown 2003; Nielssen, 2005). However, more recent theoretical approached to emotional processing (Boiger & Mesquita, 2012), and data on social media and audio-visual design suggests that many perceptual and emotional experiences might be strongly influenced by cultural values (Ito & Nakakoji, 1996). On the one hand, studies looking at cultural factors across nationalities have identified dimensions in which people from different countries and nationalities differ (Hofstede, 2010), with some demonstrations that aesthetic appreciation may vary with geographical location and culture (O'Connell, 2014). On the other hand, another set of studies have shown that, within a given culture, people "cosmopolitan orientation" influence cultural habits, and openness to experience foreign product (Cleveland et al., 2009; Skrbis & Woodward, 2007).

Hence, in our study we aimed to assess emotional experiences of viewers and to look at the effects of culture from two different approaches. First, we compared Spanish viewers' expectancies and

experiences of films produced in countries that differed in important cultural dimensions such as Spain, Finland or US (Hofstede, 2010). In this case, all the viewers came from identical national backgrounds (Spain), and the films were selected so that the genre and topic were similar, although the country of production and the underlying script reflected historical and cultural elements of their corresponding countries. Second, we compared participants with different cultural orientations and compared their expectation and emotional experiences of the films. For this, we divided participants according their cultural orientation and compared their responses to the three films. Common to these two approaches is the idea that, in order to enhance the success of a product, it is important to assess the users' experiences; to identify the features of the product that have the desired impact on the users. When applied to film, this means to find the elements of the films that raise interest in the audience, elicit the intended emotion and provoke a general experience of liking the movie. (Silvia & Berg, 2011; Tarvainen et al., 2014). Although these features can be universal because they draw into universal emotions, recent theories (Boiger & Mesquita, 2012) suggest that many of these features could be culturally mediated.

Contrary to our expectation, results of our study suggest that some of the emotional experiences to culturally diverse movies can be, at least in part, universal. Comparison of the emotional profiles of the three movies was very similar. The pattern of button presses of our participant to the movies yielded similar emotional profiles with the three movies considered to be moderately interesting and the more voted sequences having similar emotional features. Similarly, the overall expected interest and the distribution of expected interest and enjoyment of different aspects of the movie (acting, visual composition etc.) for the three movies was similar. These similar distributions also reflected in the similarities of the reported overall experiences of the participants and the distributions of their emotions.

Evidence from universal emotions in films also come from comparison regarding group experiences. The results of our analyses on participants' responses to our demographic and cultural questionnaire yielded two factors (cultural interest and Travel/language) that helped us to define cosmopolitan orientation by dividing our participants between those who scored high and low on *the Travel and Language* factor. Results of these analyses showed no interactions between film and groups, suggesting that cultural orientation and openness to other cultures were not affected by the expectancies, experiences and emotions to films varying in cultural background. Interestingly the Spanish movie was not liked better or worse for people coming from the same culture. Similarly, the   the more culturally different Finish movie was not perceived as better or worse by the Spanish participants with lower cultural interest or with lower experience in travelling and foreign languages. Although there were some overall variations in the films, they were small and unreliable since they did not appear when considering the complete group, and the more important point is that there were no relevant interactions between film and group.

Together, these results support the idea that universal emotions are elicited by different aspects of the films. But why are this data at odd with other studies showing culturally mediated experiences toward visual products or the role of cosmopolitan orientation in culturally loaded products (Cañas-Bajo & Silvennoinen, 2017; Cleveland et al., 2009; Savage et al., 2013) Recently, some research from appraisal theories of emotion suggest that some mental symbols mediating emotional experiences might be universal (Chang et al., 2013; Ivonin et al., 2015). From this view, mental symbols mediate the connection between the physical world that produces emotional reactions and the psychological state that make people aware of them. It is the appraisal of symbolic contents that makes emotional become real and the challenge is to find universal symbols that sustain universal emotions (Chang et al., 2013; Ivonin et al., 2015). Borrowing from Jung archetype notions, they suggest that some symbolic contents seem to be identical across time and space. The child, the mother, the good ancient man represent

archetypal events and archetypal figures that may sustain universal unconscious emotions. When applied to aesthetics experiences this can help to design emotional products that provoke universal reactions, to explain why emotional reactions to some aesthetic products such as films seem to provoke universal emotions. Elements like the hero's travel, the child, the figure of the mother etc., might be symbolic elements that when included in the narrative and strengthening them by audiovisual features might produce universal reactions (Chang et al., 2014). Although, in our view, this proposal is in need of support of much more empirical data, the fact that the selected movies contained many of these universal figures and events may explain the lack of culturally mediated effects on our viewers' emotional responses. Further studies comparing films with different archetypal structure may help to disentangle the roles of universal and culturally mediated emotional experiences.

Several aspects of our data (button presses and questionnaires) merit some further considerations. First, the consistency between different types of responses. Thus the button processes, the responses to questionnaires and the verbalizations to open questions were very consistent in showing that three films were considered of moderate interest to the participants with all the responses moving in the middle point of the scales. This middle point did not seem to be caused by participants tending to always respond in the middle portion of the scales since there were also emotions that were low in the scales and there were sequences with small or larger numbers of button presses. Hence participants' consistency did not mean lack of discrimination, but reliable and consistent responding across tasks and measures. Second, analyses of the more voted sequences support the idea that interest in films are produced by complex cognitive and emotional sequences in agreement with previous theoretical ideas and research on "interest" as an important emotional experience (Silvia & Berg, 2011).

In summary, results of the present study lead us to conclude that, at least in part, films are able to produce universal emotional experiences. However, as the previous paragraphs suggest some limitations of our study preclude generalization of these conclusions. First, our participants were all coming from the same cultural/national background (Spain) and they were very similar in education and age. Very possibly comparisons of viewers from different nationalities and ages might yield different results. Same data suggest that older people with less access and experience with technology and audio-visual contents are more susceptible to cultural effects. Cultural globalization is a relatively new phenomenon that may produce age differences in the way cultural products are perceived. Second, the films were all coming from western cultures, it is possible that comparison between more extreme cultural differences might show differences in the emotional experiences to culturally different. Finally, and most importantly, in order to control for genre and topic of the films, the three selected films displayed common archetypical events and figures and it is possible that other genres (e.g. comedies) and topics provoke different culturally loaded emotional experiences. Future studies should also address this point by comparing films varying in genre and topic.

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APENDIX 1: Data sheet of Empire of the Sun. *Source: https://www.filmaffinity.com/en/film286211.html*
Original title
Empire of the Sun
Year of production
1987
Running time
145 min.
Country
USA
Director
Steven Spielberg
Screen writer
Tom Stoppard (Novela: J.G. Ballard)
Music
John Williams
Cinematography
Allen Daviau
Cast
Christian Bale, John Malkovich, Joe Pantoliano, Miranda Richardson, Nigel Havers, Leslie Phillips, Masato Ibu, Emily Richard, Rupert Frazer, Ben Stiller
Producer
Warner Bros
Genre
Drama. Adventure. World War II. Based on real facts. China-Japan War (II)

Synopsis
An aristocratic British youth is separated from his family at the start of World War II after the Japanese Army invades British controlled areas of China. Reduced to living on the street and fighting for food, the youth is eventually interned in a Japanese POW camp for British civilians. Here, admiration quickly develops both for captured American pilots and the Japanese themselves. When the war ends, the boy torn from everything he knew attempts to again find his parents.

APENDIX 2: Data sheet of Ispansi. *Source: https://www.filmaffinity.com/en/film939527.html*

Original title
Ispansi (¡Españoles!)
Year of production
2011
Running time
115 min.
Country
Spain
Director
Carlos Iglesias
Screenwriter
Carlos Iglesias
Music
Mario de Benito
Cinematography
Tote Trenas
Cast
Esther Regina, Carlos Iglesias, Isabelle Stoffel, Eloisa Vargas, Bruto Pomeroy, Isabel Blanco
Producer
Coproduction Spain-Switzerland; Maestranza Films / Saga-Productions / Un Franco 14 Pesetas
Genre
Drama | Spanish Civil War. Based on real facts. World War II.

Synopsis
Shortly after the outbreak of the Spanish Civil War, the Republic sent 3,000 children to Russia to protect them from the bombing of the nationals. The first to leave were the children of the orphanages. Beatriz, daughter of a wealthy family of rights, whose father and brother were Falangists, became pregnant with a man who refused to marry her and decided to hide his son in an orphanage in Madrid. Upon learning of the child's imminent trip to Russia, she steals the identity documents of a dead Republican (Paula) and volunteers to care for the children. He will thus embark on a terrible journey, surrounded by enemies, and thousands of miles from her country and her world. In June of 41, Hitler invaded Russia. The continuous arrival of troops for the defense of Moscow obstructs again and again the trip of the Spaniards. In one of these stops Alvaro, a political commissar of the Communist Party of Spain is united to them.

APENDIX 3: Data sheet of Mother of Mine. *Source: http://www.filmaffinity.com/en/film355236.html*

Original Title
Äideistä parhain
Year of production
2005
Running time
111 min.
Country
Finland
Director
Klaus Härö
Screenwriter
Jimmy Karlsson, Kirsi Vikman
Music
Tuomas Kantelinen
Cinematography
Jarkko T. Laine
Cast
Topi Majaniemi, Marjaana Maijala, Esko Salminen, Aino-Maija Tikkanen, Michael Nyqvist, Maria Lundqvist, Kari-Pekka Toivonen, Brasse Brännström, Penny Elvira Loftéen, Maria Langhammer
Producer
Coproduction Finland-Sweden; Matila Röhr Productions (MRP) / Omega Film & Television AB / Film i Skåne
Genre
Drama | World War II

Synopsis
Mother of Mine is a film about the fate of one little boy amidst the warring world. Finland goes to war and 9-year-old Eero's father is sent to the front. Even though his father promises him that the war will soon be over, things are never the same again. Shortly after the start of the war, sad tidings come from the front that make Eero's mother, Kirsti, break down completely. Widowed and crushed by sadness, Kirsti is not able to look after her son and he sends Eero to safety in Sweden, a neutral country untouched by the war. Kirsti assures him that it's for Eero's own good, but Eero has trouble understanding this. The journey towards a new country and a new mother begins. During the Finnish-Russian War more than 70 000 children were evacuated from Finland to Sweden.The story is loosely based on Heikki Hietamies's novel by the same title.

V

HOW OLDER AND YOUNGER PEOPLE SEE TECHNOLOGY IN NORTHERN AND SOUTHERN EUROPE: CLOSING THE GENERATIONAL GAP

by

Cañas-Bajo, J., Leikas, J., Jokinen, J., Cañas, J. and Saariluoma, P.

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Original

How older and younger people see technology in Northern and Southern Europe: Closing the generation gap

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J. Cañas-Bajo, J. Leikas, J. Jokinen, J.J. Cañas, P. Saariluoma. How older and younger people see technology in Northern and Southern Europe: Closing the generation gap. Gerontechnology 2016;14(2):110-117; doi:10.4017/gt.2016.14.2.010.00 **Background** Mental representations of technology can be affected by many social and biological factors. The aim of this study was to test the effects of two of these factors, age and culture, on how people mentally represent and experience technologies by comparing the conceptions of old and young people in Spain and Finland. Both Spain and Finland are European countries, but they are historically, geographically, and culturally very different. **Method** The study is framed within the life-based design (LBD) paradigm, where culture and age interact to define particular forms of life in which technology might be used and perceived differently. We hypothesised that there are differences in the mental representations of technology of Spanish and Finnish people, but that those differences are mediated by age. **Results** Our results showed that technology conceptions between the two countries differ when considering older generations. However, when we consider younger generations, the gap between the two countries regarding technology is smaller.

Keywords: technology generations, culture and technology, user perception

Technologies help improve the quality of human life. Two important questions are how technologies are represented in the human mind and how they are used and perceived by people. Mental representations of technology include elements of the system as it relates to the world, but they also contain cognitive and emotional elements that influence the relation of the user with the object[1-3].

In order to accomplish the mission of improving the quality of human life, designers must ask themselves whether people actually perceive and mentally represent technologies as helping them, and what role technology plays in their lives. These questions are in the agenda of researchers working on the human dimension of technology. For example, they are being addressed within the life-based design (LBD) paradigm[4,5]. For LBD, the basic question is how technology is incorporated and implemented in different everyday contexts and what the possible roles of technologies are in improving human life. For this, it is important to analyse life contexts and the possible ways that technology can facilitate people in reaching their goals during their normal lives. In LBD, regular human contexts have been termed "forms of life"[4,6]. Thus, any regular way of living for a person can be seen as a form of life, a way of doing things within a particular culture, social context, or biological factor (e.g. age), which can be taken as the ground for examining and developing technological products or services.

'Forms of life' were selected as the basic concept in LBD because they are sufficiently flexible. Being a soccer fan is a form of life, but so is being a Catholic, an Italian, a hunter, lonely, older, ill, or rich[4,6,7]. A form of life is simply a set of integrated regularities that people follow in their lives. People are surrounded by numerous forms of life and participate in an unlimited number of them. Thus, they follow the regularities defined by the various forms of life in which they participate. Two critical factors that determine particular forms of life, and which are the focus of our study, are culture and age. Being a member of a

certain culture and belonging to a specific generation are typical forms of life which overlap with each other. Catholics have different ways of worshiping than Protestants, and most old people consider different things important in life than do younger ones[8]. Since the rules of behaviour vary in different forms of life, it is meaningful to investigate how different forms of life affect users' conceptions of technologies. When developing services or artefacts for people, it is important for designers or interaction researchers to understand the nature of the form of life in question.

Although the modern world is becoming increasingly international, it does not mean the disappearance of cultures. People still have different national laws, habits, and practices; they have different religions, different languages, and different moral standards[9]. Similarly, countries differ along cultural dimensions that can determine forms of life and the way in which technology is used and perceived. In fact, the irruption of technology into the human way of life has given rise to the idea of technological forms of life. Technology externalises knowledge, speeds up life, and stretches out and changes the concept of distance[7], closely interacting with social, cultural, and biological ways of living.

Culture around ICT

Thus, although the culture around ICT (Information and Communication Technology) is sometimes seen as relatively similar in different countries as the systems and services are used worldwide, the transfer of attitudes towards and conceptions of technology from one culture to another is not necessarily smooth. For example, Sundqvist, Frank, and Puumalainen studied the influence of Hofstede's cultural dimensions (individualism, power distance, masculinity, and uncertainty avoidance) on the adoption of wireless communication and found that countries with higher uncertainty avoidance adopted new technological innovation slower than countries with higher tolerance[10]. Thus, for any internationally oriented design project and product, it is also important to understand how international and traditional components operate when people experience their products. Consequently, it is important to study international, modern, and traditional mental representations of consumers concerning objects.

An obvious assumption is that older people who have lived in a much less international world represent modern products differently from younger ones. For example, Prensky makes a distinction between digital 'natives' (who have grown up with digital technology) and digital 'immigrants' (adults who have come to it later in life)[11]. He argues that digital natives differ in their learning style from that of digital immigrants. They prefer interactivity, graphics, and pictures instead of words, and fast presentations rather than slower, step-by-step logical expositions. One can imagine that national cultures have a stronger influence on older people than on younger, more internationally oriented internet generations. However, we do not know whether essential cross-cultural differences exist between technology generations, though it is important to know this. In the field of gerontechnology, the term technology generation is defined as a group which experiences the adaptation of technology in a specific context and with the social changes that occurred during the lifetimes of the members of that group[12-15].

Today, the use of technology is growing increasing fast, meaning that younger generations have grown up in a highly digitised environment, and the learning process has been closely linked to these changes[16]. In most schools in Western and Westernised countries, students use these new tools to achieve their learning goals[17]. The Internet has created a new way of understanding communication, and the possibilities for young people in this field are endless. However, it is also important to realise that these changes are relatively new. For the older generations, these innovations were introduced during adulthood. Thus, their adaptation has been more difficult[18].

Adopting new technologies

Adopting new technologies comprises a number of factors related to their use. It is for this reason that the individual context of the users must be understood beyond generational differences[19]. This context might refer to socio-cultural aspects; different sectors of the population perceive different benefits of the use of technology, and they differ in their access to these new tools. These elements have a clear influence on adoption[20].

Currently, it is assumed that the countries of the West, as members of Europe or the United States, are framed within similar socio-cultural contexts. While during the last 10 to 15 years, popular culture has become globalised[21], factors such as social context, language or the recent history of a country can have a decisive and critical influence on the use of technology[22]. We assume that the socio-cultural elements pushing people towards technological use may be more common in younger generations than in older generations[11] and that this might differ depending on the country so that the technological generation gap might differ for each country. Thus, older people in countries with a high tolerance to uncertainty might reduce the technology gen-

eration gap since the culture as a whole more easily adopts new technological advances[10]. Interestingly, although European countries are on the top of the list of highest scanning, with the US and Japan, Spain, along with France and Italy, seem to be lagging behind in this process[23]. Thus, the way older and younger generations use and perceive technology might differ when we compare these countries with other countries that more easily adapt to technology.

Europe is particularly interesting with respect to technology generation and culture. It has been very strongly divided during the last century, but the European Union has worked for half a century to create a less divided Europe. Technology has also been internationalised over the past decades. Markets are dominated by international brands, which have unified technology conceptions. Thus, cultural differences exist but there are also many factors which build bridges over generations and cultural gaps.

In our study we explored whether cultural differences related to technical products would be evident when comparing the technological conceptions of people of different ages living in two very different European countries. Is the cultural gap between older people different than between younger generations? Specifically, we selected Finland and Spain as target countries. They are both in a common European framework, but there are essential linguistic historical and cultural differences between the countries. In particular, the older generations have lived in very different cultural and technological circumstances. For example, illiteracy problems were solved in Finland before Spain, and Finland has been a democratic and technology oriented country much longer than Spain. However, linguistically and culturally, Spain has always been a central part of a wider and international cultural community than Finland. In addition, the two countries differ in Hofsteder's 'uncertainty avoidance' dimension, with Spain having less tolerance to uncertainty than Finland[24-26]. Thus, these two countries provide good examples for studying cultural and national differences.

With this study, we propose a new way of understanding these technological differences. We believe that it is important to understand the perception that individuals have of technology in each country in order to better understand the different processes of adapting to new technologies by cultural context and generation. A good analysis of these factors would provide a perspective on how they affect the social, economic, and cultural differences across generations in Spain and Finland in the adoption and use of technologies.

We investigated if there are cultural and generational differences in the appreciation of factors such as ease of use, aesthetics, ecological features, brand name, reliability, durability, domestic content and novelty of technological features when purchasing technological products. In addition, we wanted to explore whether these two factors interacted so that possible cultural differences were less pronounced for younger people.

METHOD
Overview
To reach our goal we carried out a survey concerning the importance of different factors in technology when purchasing technological products. A web-based questionnaire was undertaken by Finnish and Spanish participants across different ages, genders, and technological backgrounds and skills. We classified the ages of the participants in three different groups. The classification is based on the idea of technology generations. Technology generations reflect the historical timing of technology innovations and their diffusion into productive and cultural spheres, linked with the time period in which a cohort comes of age[27]. One reason for understanding this concept in product design is that people learn to use technologies at a certain age, and this understanding of how to use technologies (present and future) is built on the kind of knowledge that is typical for that cohort[28].

The questionnaire consisted of a series of questions related to the appreciation of different aspect of technology that people could consider when buying new technological products (e.g. ease of use, aesthetics, durability). These aspects were selected based on the basic idea of LBD, in that understanding the cognitive and emotional value of the product for the user in the context of culture and life is critical for the success of the product design[4,5]. The aim was to find the factors that could be connected to global objectives that people might value when purchasing and using technology. Because technology is a wide concept, we focus the questions on communication technologies such as telephones and computers. The advantage of focusing on communication technologies is that they have grown so rapidly that it is possible to study their adoption while it is still ongoing, and to understand developmental trends in technological gaps across generations and cultures[16].

Participants
Seven hundred and ninety-three participants filled out the questionnaire, 653 from Finland and 140 from Spain. The average birth year for the Finnish participants was 1978 (MDN=1985, SD=14.18), and for the Spanish participants it

was 1973 (MDN=1975, SD=12.3); 67.2% of the Finnish respondents were women, and 53.6% of the Spanish respondents were women. We divided the data into three generations (technology generations): 1945–1964, 1965–1980, and 1980–1992. Due to the discrepancy between the number of Spanish and Finnish participants in the range of those born between 1930 and 1944 (Finland=147, Spain=2), participants from this generation were excluded from the analysis (Table 1).

Because the study was conducted from Finland, access to the Spanish sample was limited, resulting in a reduced sample. Thus, the distribution of the Finnish and Spanish datasets differed in the number of participants across the technological-generation categories, which may cause problems for ascertaining the internal validity of the study. However, although with caution, the consistency of the data may provide valuable information about the aspects of technological products for Spanish and Finnish participants.

The technological background of the participants was measured with a self-assessment computer skills scale ranging from 1 to 4. As mentioned below, The Finish and Spanish participants were equated in their self- assessed computer skills.

Procedure
All participants filled out a questionnaire regarding how important they felt different aspects of technological products were when purchasing new technology. The questionnaire was presented online in both Finland and Spain, and the participants responded to the questions using their own computers. To provide a context for the participants when rating technological products, the instructions exemplified the advance of technology regarding telephones and computers and the participants were instructed to their answers to the use of communication technologies, and more concretely, to the use of phones and computers. Once they read the instructions they had to press a key to start the questionnaire. Participants were presented each item on the screen with a printed scale below (from 1 to 4). They were asked to respond by choosing the value with a radio button in the computer.

The data were collected in two different rounds (2011 and 2014). Both the Finnish and Spanish questionnaire contained eight items concerning the importance of some features when considering acquiring new technology: ease of use, aesthetics, ecological aspects, brand name, reliability, durability, domestic content, and the newest technological features. In addition, the Finnish dataset included one more item regarding affordance. Participants had to rate the importance of each of these aspects on a scale from 1 to 4, where 1 represented 'Not important at all' and 4 represented 'Very important'.

Statistical analyses
Participants' ratings regarding self-assessment of their computer skills were analysed first by using independent samples t test (Table 2). In order to assess the possible effects of country, generations and their interactions for each of the importance scales, we performed general linear model analyses. As each factor represented and independent question, a separate model was constructed for each item in the questionnaire. In the model, the dependent variable was one of the interval scaled appreciation variables (ease of use, ecological aspects, aesthetics, etc.), and the independent terms were country, technology generation, and interaction between these two. We followed the significant interaction effects with pairwise Mann Whitney U comparisons for a more detailed analysis. Further, effect sizes (Cohen's d) were considered.

RESULTS
Participants' self-ratings
The mean ratings for both the Finnish and the Spanish samples was 2.5, with statistically non-significantly different means: $t(186)=825$, $p=0.41$. This result is important for the internal validity of cross-cultural analyses because the differences observed below are unlikely to be due to differences in technological skills. In addition, for both countries, the connection between technology generations and computer skills was the same for both countries, with the older generation reporting the least computer skills (Finnish: 2.4; Spanish: 2.0) and the middle generation the most computer skills (Finnish: 3.0; Spanish: 2.8).

Answers to the questionnaire
Appendix 1 shows the mean ratings and standard deviations for each item in the questionnaire as a function of countries and technology generation.

Ease of use
The results of the analysis of the ease of use data showed a tendency for the older technological generation to give greater importance to the ease of use than the middle and younger generations. However this effect did not reach statistical significance ($\chi^2(1)=4.8$, $p=0.090$). Similarly,

Table 1. Distribution of technology generation (birth years) between the countries; Percentages are within countries

Country	%		
	1945–1964	1965–1980	1981–1994
Spain	23.6	40.7	35.7
Finland	18.5	15.5	66.0

Table 2. Means and standard deviations of the eight items in Spain and Finland and the different generations

Item	Generation					
	1945-1965		1965-1980		1981-1994	
	Spain	Finland	Spain	Finland	Spain	Finland
Ease of use	3.39±0.56	3.25±0.73	3.16±0.56	3.16±0.76	3.08±0.75	3.14±0.75
Aesthetics	2.48±0.62	2.12±0.75	2.56±0.84	2.69±0.79	2.66±0.72	2.74±0.83
Ecological aspects	2.79±0.78	2.24±0.76	2.51±0.85	2.41±0.88	2.30±0.81	2.43±0.85
Brand name	2.07±0.75	2.21±0.94	2.17±0.78	2.16±0.75	2.14±0.79	2.29±0.77
Reliability	3.20±0.67	3.65±0.55	3.55±0.57	3.54±0.63	3.63±0.57	3.58±0.55
Durability	3.24±0.58	3.49±0.61	3.47±0.57	3.44±0.66	3.59±0.67	3.57±0.57
Domestic content	1.86±0.83	2.64±1.01	1.58±0.74	1.97±0.89	1.77±0.80	2.05±0.86
New technological features	2.34±0.86	2.01±0.88	2.47±0.89	2.26±0.90	2.22±0.85	2.01±0.85

the effect of country ($\chi^2(2)=0.20$, p=0.650) and the interaction between country and generation ($\chi^2(2)=1.74$, p=0.420) were not significant, indicating that there were no differences between countries and generations in the importance they gave to ease of use when buying new technology.

Aesthetics
The results of the aesthetics scale showed a different pattern. Although there was no significant effect of country ($\chi^2(1)=0.95$, p=0.320), the effects of technological generation ($\chi^2(2)=19.24$, p<0.001) and the interactions between country and generation ($\chi^2(2)=6.62$, p=0.037) were significant (*Figure 1a*).

This interaction indicated that the older generation (1945–1964) attributed less value to aesthetics as an important feature when buying technological devices than did the younger generations, but this was especially true for the Finnish sample. The results of the Mann Whitney U test indicate that the only significant difference between countries was for the older generation (p<0.007, d=-0.54).

Ecological aspects
The results of the analysis on the ecological aspects data also indicated that country ($\chi^2(1)=4.87$, p=0.030) and the interaction between country and technological generation ($\chi^2(2)=10.92$, p<0.001) were significant. Mann Whitney U comparisons between countries at each level of generation indicated that for the older generation, there were differences between the Spanish and Finnish participants in the importance that they attributed to ecological aspects (p<0.001, d=-0.73). Spanish participants from the 1945–1965 generation tended to value ecological aspects more than any of the other groups, whereas the Finnish participants of this same generation tended to value this aspect less than other groups (*Figure 1b*).

Brand name
In contrast, the importance of brand name does not seem to vary depending on country ($\chi^2(1)=1.38$, p=0.240) or generation ($\chi^2(2)=0.69$, p=0.710), and there was no interaction between

these two variables ($\chi^2(2)=1.97$, p=0.370). In general, when looking at responses to this item (*Figure 2*) in relation to other items in the questionnaire, brand name does not show much variation across groups, and it seems to be rated as less important than other dimensions.

Reliability
The results of the analysis on the reliability data indicated that although the main effect of generation was not significant ($\chi^2(2)=5.03$, p=0.080), the effect of country ($\chi^2(1)=6.2$, p=0.010) and the interaction between generation and country ($\chi^2(2)=12.6$, p=0.002) were significant. This interaction indicated that for the older generation, Finnish participants gave greater importance to reliability of the product than the Spanish participants (p<0.001, d=0.76), whereas this difference disappeared for the middle (p=0.650) and younger (p=0.520) generations (*Figure 1c*).

Durability
The results of the analysis of the durability data showed that country did not reach significance ($\chi^2(1)=2.53$, p=0.110). However, the effects of generation ($\chi^2(2)=14.96$, p=0.001) and the interaction of country and generation ($\chi^2(2)=7.62$, p=0.020) were significant, indicating that durability was less important for the older Spanish generations (p=0.004, d=0.56; *Figure 1d*). The differences between countries were not significant for the middle generations (p=0.930) or younger generations (p=0.530).

Domestic content
The results of the analysis of domestic content (products made in the same country) data indicated that although country ($\chi^2(1)=27.84$, p<0.001) and generation ($\chi^2(2)=17.36$, p<0.001) were significant, the effects of the interaction of country and generation was not significant ($\chi^2(2)=4.35$, p=0.110). The Mann Whitney U test indicated that the Finnish respondents were more concerned about the nationality of technology in all three generations (older: p<0.001, d=0.83; middle: p=0.010, d=0.46; and younger: p=0.020, d=0.34). However, the younger generation gave less importance to this item (*Figure 1e*).
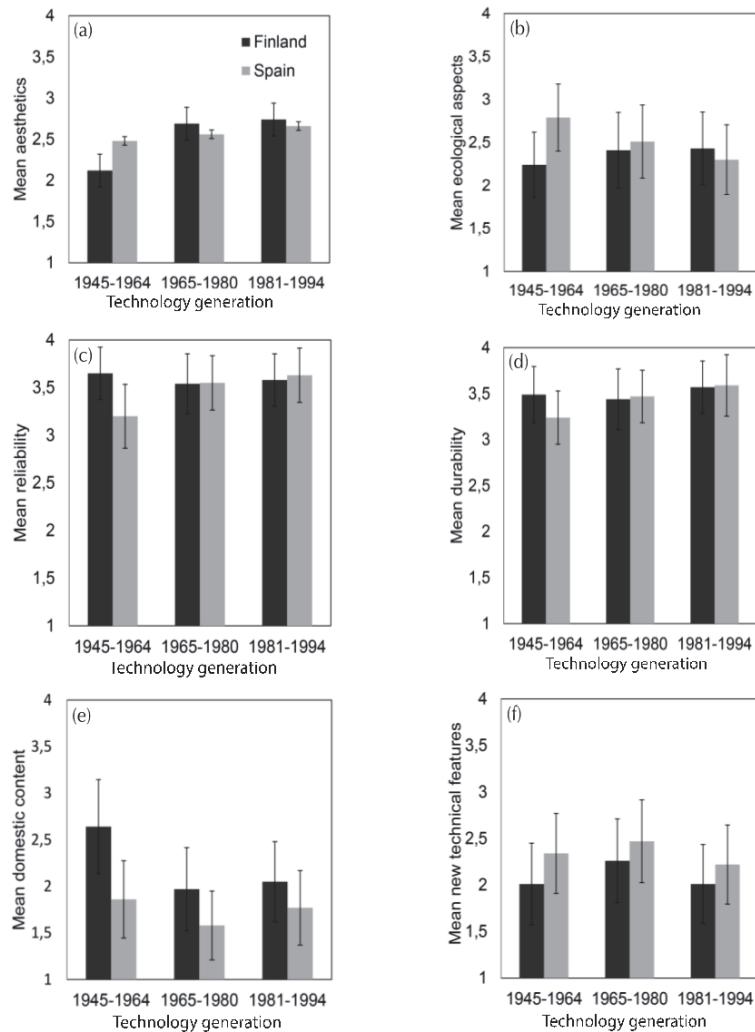
Figure 1. Mean ratings as a function of country and generation; error bars represent a 95% confidence interval; a. Aesthetics; b. Ecological aspects; c. Reliability; d. Durability; e. Domestic content; f. Newest technological feature

Newest technological features.
Similarly, the results of this item indicated significant main effects of country (χ^2 (1)=8.44, p=0.004) and generation ($\chi^2(2)$=7.41, p=0.025). However, the interaction of country and generation did not reach significance ($\chi^2(2)$=0.58, p=0.750), indicating that Spanish participants gave more importance to new technological features overall than did participants from Finland. This suggests that participants from the middle generation attributed more importance to new

features than did participant from other generations (*Figure 1f*).

The mean difference between countries was significant in older generation (p=0.040, d=-0.38). However, there was no significant difference in the middle (p=0.140) and younger (p=0.140) generations. The middle generation gave more importance to the newest technological features.

GENERAL DISCUSSION

The aim of this study was to examine whether cultural differences in the perception of technological devices were evident when looking at the conceptions of people of different ages in two European countries, Spain and Finland, with different literacy and technological trajectories and with different weight on some cultural dimensions[24]. With this purpose, Finnish and Spanish participants of different generations (1945–1964, 1965–1980, and 1980–1992) were asked to answer questions related to their appreciation of eight different dimensions regarding technology that they take into account when purchasing technological products such as phones and computers. The basic idea, taken from the LBD approach, was that it may be possible to predict the success of a product based on factors related to the users' context of culture and form of living, which may influence the value of the product for the user.

The results indicated that although brand name and ease of use were valued to a similar degree by Finnish and Spanish participants across all technology generations, there were important differences regarding the dimensions aesthetics, ecological aspects, reliability, durability, domestic content, and the presence of new technological features in the product. Interestingly, aesthetics, ecological aspects, and newest technological details were dimensions with a low value for Finnish participants, especially for members of the older generation. In fact, the difference between Spanish and Finnish participants was significant for the older groups, with the Finnish older group showing a lower appreciation of these features than the older Spanish group. In contrast, older Spanish participants valued reliability, durability, and domestic content more than the older Finnish group. Thus, for all dimensions, the differences between Finnish and Spanish participants were evident only for older generations, and the differences disappeared or became smaller in the case of younger people.

Our results illustrate that there were cultural differences in the mental representations of technology. However, this cultural gap seems to be closing up. Hence, the results suggest that unified ICT culture may direct the values of the younger generations towards a shared, more unified way of seeing technologies. Techno-culture can thus be one unifying factor in Europe.

Although somewhat speculative, at a theoretical level, the notion of forms of life could help to explain these results. The culturally oriented way of doing things[7] is not constant but changes through history. Some important properties of a form of life can lose their meaning as a consequence of cultural developments. The results illustrate how important it is to study the interplay between different forms of life. Forms of life live, combine, and separate. Indeed, Dummett[29] offered an applicable metaphor for forms of life when he compared linguistic forms of life with the endlessly changing sea of meanings. Similarly, design and research must acknowledge the endlessly changing nature of technology in the contexts of life. Thus, while the perception of technology in Finland and Spain differ for older people, representing different forms of living and different uses of technological devices in normal life, these ways seem to have changed and developed with time so that differences in technological forms of life seem to dilute and converge in younger generations. Note that we are assuming that different technological generations represent different forms of life. It should be addressed, that if different ways of capturing forms of life have the same consequences in the way in which technology is represented.

Nevertheless, it is good to keep in mind that older people and older values are still here. Older people make independent technology acquisition decisions. Therefore, one should not underestimate the meaning of cultural differences when technologies are designed for seniors. This 'silver market' group is still influential. It is often quite well-to-do, and for this reason, it is not necessarily wise to design technologies for older people on the grounds of the internationalising values of young people. In designing gerontechnology, cultural differences still play a role.

Although our study has some methodological and theoretical limitations due to the differences in the number of participants or to the difficulties in operationalising forms of life, our results show a critical implication for designers. As the cultural gap is disappearing, culture-oriented design should be aware of the aspects that differentiate different generations in a specific period of time. Designers should be able to create modifiable technologies targeted at different user groups. In the field of human-technology interaction, the problem of design should be conceptualised and argumentatively supported using concepts and theories based on the analysis of everyday life, that is, the facts and values of life.

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VI

MULTICULTURAL EDUTAINMENT ROLE MODELS FOR WOMEN IT PROFESSIONALS - AN INNOVATIVE PROPOSAL TO CREATIVE INDUSTRIES

by

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