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Virtual reality technologies viewing experience and point of view: A study of university students in Istanbul

Sanal gerçeklik teknolojilerinde izleme deneyimi ve bakış açısı: İstanbul'daki üniversite öğrencileri üzerine bir araştırma



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Abstract

This study was conducted to identify trends in demand and preferences regarding the change and transformation of the concepts of viewing experience and point of view (POV) within the framework of film narratives, particularly among students studying in the Radio, Television and Cinema department, within the context of new communication technologies (NCTs). In line with the aim of the study, the Virtual Reality Experience Questionnaire, the Film Viewing Experiences Scale and the Point of View Scale in Film Narratives—all developed by the researchers for this study—were administered to 214 university students aged between 18 and 25 (104 women, 110 men) studying at various universities within the province of Istanbul. The findings reveal that viewing experiences presented through POV of virtual reality headsets—which utilise new communication technologies to provide 360° viewing—are of interest to the younger generation studying film, and suggest that individual viewing experiences outside cinema theatres may be preferred over collective viewing experiences within them.

Öz

Bu çalışma, yeni iletişim teknolojileri çerçevesinde, özellikle Radyo, Televizyon ve Sinema bölümünde okuyan öğrenciler bağlamında, film anlatıları çerçevesinde seyir deneyimi ve bakış açısı kavramlarının değişimi ve dönüşümüne dair talep ve tercih eğilimlerini tespit etmek amacıyla gerçekleştirilmiştir. Çalışmanın amacı doğrultusunda İstanbul ili içerisinde bulunan çeşitli üniversitelerde öğrenimi gören 18-25 yaş arasında 214 üniversite öğrencisine (104 kadın, 110 erkek) çalışma kapsamında araştırmacılar tarafından geliştirilen Sanal Gerçeklik Deneyimi Anketi, Film İzleme Deneyimleri Ölçeği ve Film Anlatılarında Bakış Açısı Ölçeği uygulanmıştır. Elde edilen bulgular, yeni iletişim teknolojilerinin kullanıldığı 360° görüntü boyutu sağlayan sanal gerçeklik gözlüklerinin bakış açısıyla sunulan seyir deneyimlerinin sinema eğitimi alan genç kuşak tarafından merak edildiğini ve sinema salonlarındaki kolektif seyir deneyimlerine göre sinema salonları dışındaki bireysel seyir deneyimlerinin daha fazla tercih edilebileceğini ortaya koymaktadır.

Keywords

Viewing experience • virtual reality • point of view • hyperreality • film narrative

Anahtar Kelimeler

Seyir deneyimi • sanal gerçeklik • bakış açısı • hipergerçeklik • film anlatısı



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Virtual reality technologies viewing experience and point of view: A study of university students in Istanbul

The use of hyperreality in virtual reality (VR) film narratives has a profound impact on the mechanism of identification in the viewer's relationship with the film and its characters. Viewers stepping into a hyper-real world with VR headsets can connect more deeply with the film's narrative for a personalised viewing experience. Considering the historical transformations of the cinematic viewing experience, it should not be overlooked that each NCT accelerates these changes and transformations. While cinema engages the viewers' senses of sight and hearing—often in conjunction with other senses such as touch—VR introduces spatial experiences that kinesthetically engage the viewers' bodies, transforming them into active participants within the narrative (Ceuterick, 2021, p. 331). The experiences induced by VR within the narrative also pave the way for alternative modes of perception. VR not only transforms the perception of space and reality but also alters the visible attributes of the body (Slater, 2009, p. 3554). During VR viewing, the bodily involvement and the viewer's role in defining the sensory scope can create the impression that the camera's perspective corresponds to the viewer's own point of view, thereby evoking a powerful sense of lived experience. This can influence the encoding of narrative events and their retrieval from memory (Szita et al., 2018, p. 413). Such a condition necessitates a presentation strategy for VR headsets that differs from the narrative strategies of two-dimensional films. Various alignment techniques employed in the movement of the VR camera establish a relationship between the user and the image that diverges from the relationship characteristic of traditional cinematic forms (Rogers, 2023, p. 5). While directors and screenwriters conceptualizing for the cinema screen often focus on a two-dimensional narrative structure, in shooting a three-dimensional film they must construct the narrative with the viewer's ability to explore the scene in 360° in mind. At this point, the viewer's perception in making sense of the narrative becomes a significant factor. The phenomenology of immersion in virtual reality, along with the extent to which the brain processes VR experiences as credible and the emotional impact they may generate, has attracted academic interest (Vera & Gutierrez, 2023, p. 3). The immersive nature of 360° videos, when viewed through the medium of virtual reality headsets, engenders in the viewer the sensation of actual physical presence within the depicted environment. This type of illusion has been demonstrated to engender heightened interest in narratives, showcase the capacity for novel interpretations of events, and promote emotional responses, including empathy for the characters (Barreda-Ángeles, 2021, p. 155). For viewers who can identify with both the character and the film's narrative in a three-dimensional way during the viewing experience, the impact of the change in the viewing experience in the context of VR technology opens up areas for questioning from the viewer's POV. Given the scarcity of scales developed to address the issues examined in similar studies worldwide, this study has developed scales that can serve as a model. Some of the scale studies cited in the literature include the following, these studies have examined, in turn: the impact on viewers of differences in viewing experiences across various screens; statistical changes observed in viewer enjoyment and engagement (Rigby et al., 2019), the level of immersion, emotional intensity and social interaction in the film-viewing experience (Muth et al., 2015), and the conceptualisation of psychological phenomena relating to how young people from different cultures perceive dramatic narratives (Soto-Sanfiel et al., 2020), a psychological examination of the reaction of watching films in terms of the viewer's emotional responses and social interactions (Stefanek et al., 2023). Drawing on the scales cited as references, this study presents the viewing experiences of emerging NCTs from the viewer's perspective within the context of theoretical debates in the field of cinema. What distinguishes the scales used here from the reference scales is that they were administered to students enrolled in cinema programmes at universities in Istanbul. The

scales were designed with the viewer's relationship with cinema in mind. Based on the concepts of POV and identification, the differences in image size and POV between 180° and 360° cameras, as well as technical details regarding VR technology, were taken into account within the survey questions and scales.

Identification in viewing experience

When the filmmaker approaches the film image as if painting on a canvas, digital technology redefines what can once again be accomplished with cinema. In this context, the significance of new computer-based technologies becomes evident. Lev Manovich, who defines cinema as "painting in time," regards it as a partial branch of painting, suggesting that cinema has now shifted from the "kino-eye" to the "kino-brush" (Manovich, 2001, p. 305–308). While the kino-brush captivates audiences by immersing them into a simulated world through three-dimensional depth and individualizing the viewing practice, it becomes pertinent to question whether cinema practitioners will be influenced by this transformation of practice. In this regard, the perception generated in the viewer by the identification mechanism—which makes the viewing process effective—also comes into focus. The strengthening of sensory-based realism enhances the effect of identification (mimesis). Christian Metz (1983), drawing on the works of Jacques Lacan and Sigmund Freud, explains the concept of identification in cinema. According to Lacan, although the viewer undergoes a process similar to the mirror stage, it differs in that the individual, during identification, is aware that the cinematic narrative is symbolic and therefore does not require an exact representation of themselves. Identification is thus divided into two categories: primary identification, which occurs when the viewer identifies with the camera and its point of view; and secondary identification, in which the viewer identifies with the film's narrative and with a character within it whom they feel symbolically or emotionally connected to. Proposing that the desire to watch films is accompanied by voyeuristic pleasure and sexual drives, Metz sheds light on the relationship between the viewer, the cinematic narrative, and the ego (1983, p. 42–66).

Jean Baudry, within the framework of apparatus theory, draws attention to the production stage of the film, arguing that by concealing the process of filmmaking, cinema offers the viewer a sense of 'objective reality' in terms of identification with the camera. Based on Lacan's explanation of the mirror stage, Baudry illuminates the process by which the individual engages in symbolic interpretation and identification within this "reality" presented by the narrative (Baudry, 1974, p. 39–47). This state of identification, carried out not only with the narrative but also through the apparatus and its point of view, provides insights into the influence of technological developments on the impact of cinematic storytelling. In this respect, beyond identification with the cinematic narrative itself, identification with characters within the narrative becomes significant both for its implications on audience perception and for its relevance to the role of movie theaters in shaping the viewing experience. For viewers watching films through VR headsets, the mechanism of identification they experience can manifest differently within the three-dimensional cinematic space, making these distinctions increasingly evident. In the examination of VR films from a phenomenological perspective, internal questions prompted by interactive moments—such as the desire to make different decisions, regret, or curiosity about missed actions—demonstrate that VR cinema facilitates a temporal loop unique to spectatorship. This experience also indicates that it nourishes memory and thus reshapes its meaning. It has been posited that virtual reality cinema offers a profoundly personal and emotionally impactful form of participation that conventional cinema rarely achieves (Çalışkan, 2025, p. 16). In one of the studies conducted on the potential of VR cinemas to create alternative viewing experiences in the future, findings revealed that participants experienced a heightened sense of presence within the narrative and fictional world, a stronger sense of presence within the viewing environment, and a more pronounced feeling of being part of a social experience (Szita et al., 2024, p. 8). Research conducted in today's digital age shows

that the relationship between VR technology and cinema has an impact on the viewer context, indicating that this technology is closely linked to the viewing experience.

Viewing experience through VR headsets

Viewers looking at the worlds presented to them through VR headsets may experience physical uncertainty between the virtual space and the localized physical space. It is designed to provide a multi-sensory viewing experience seen in developments involving VR technology (Bown et al., 2017, p. 245–246). VR headsets, which act upon the perception of sensation, generate distinct forms of sensory experience in film viewing by influencing the viewer's perceptions in various ways. Ivan Sutherland explains how, in virtual reality, the “kinetic depth effect” enables two-dimensional images to be perceived as three-dimensional. The basic principle of a three-dimensional display is to present the user with an image whose perspective changes with movement. While objects are two-dimensional on the retina, they can nonetheless produce the impression of a three-dimensional object in the observer's retinal perception (Sutherland, 1968, p. 757). In works produced for VR, it is often noted that the technology is employed to position and move the virtual camera, and to simulate the point of view of a character within the diegesis—an alignment that anthropomorphizes the camera and facilitates its relationship with the viewer (Rogers, 2023, p. 8). The relationship established between the camera and the viewer in cinema changes in the POV of VR. Advances in VR technology enable viewers to experience a viewing experience that is different from that in a movie theater. Murray Smith contends that viewers—or, more broadly, those who engage with fiction—do not lose consciousness, as various illusion metaphors might suggest; rather, they actively and creatively entertain the propositions and images offered by fictional works. Smith underscores the agency of the viewer and characterizes film spectatorship most aptly as a form of creative activity. Moreover, describing cinema as possessing a “sensational” dimension in light of new technologies that allow viewers to experience novel and extraordinary sensations, Smith notes that in numerous modifications of basic technology, cinema has incorporated innovations aimed at fostering creativity—such as sound, widescreen formats, 3-D, Smell-O-Vision, and “tingling seats” (1995, pp. 118–119). Ann Lasko-Harvill emphasizes that virtual reality is inherently interactive (1992, p. 222), noting that within the three-dimensional environments experienced through VR headsets, the qualities of interactivity and presence position the user as an active spectator. In the digital age—where debates on active spectatorship are prominent—film theorists continue to examine how the perceptions of viewers are continuously reshaped and transformed by emerging communication technologies. A comparative study of the impact of VR films on viewers and traditional two-dimensional films has revealed that VR films induce a heightened sense of immersion and emotional excitement in viewers. VR films designed with the concept of POV allow users to immerse themselves in the story while watching the film (Carpio et al., 2023, pp. 3185–3187). This is because VR envelops the viewer's surroundings. Thus, thanks to VR, users who empathize with the virtual environment can experience embodied cognition or embodied cognition based on stories (Shin, 2017, p. 66). The significant effect of the identification mechanism that VR offers the viewer also influences the narrative strategy in cinematography. It has been recommended that the advent of VR films, which have the potential to disrupt the conventional filmmaking process, camera language, editing techniques, and audiovisual language conventions, may ultimately lead to the obsolescence of extant theories concerning editing theory in cinema (Li, 2023, p. 308). VR technology, which also initiated a transformation in cinema theories and cinematic concepts, immerses the viewer in the viewing experience, bringing them closer to a sense of reality. Within the framework of the possibilities offered by VR technology, the process of the viewer identifying with the film thus emerges more effectively. One of the most important reasons for this becoming apparent is the immersive visual effect created by the POV in the film narrative with its 360° image.

Point of view in film narrative

In cinema's illusionistic effect, the factor influencing identification is how the POV is constructed. In film narrative, the act of looking can be differentiated in several ways: the viewer's gaze, the camera's gaze, the characters' gazes, and the mutual gazes exchanged between these POVs. What the film narrative intends to convey to the audience is often presented through the faces, bodies, and eyes of the characters. In classical film narratives, the positioning of figures frontally before the camera is planned in accordance with the spectators' viewing angles. A POV shot shows what the character sees (Bordwell, 1985, p. 238). In his discussion of POV editing, Noel Carroll bases his argument on the phenomenon of eye-line matching, proposing three hypotheses. The first posits that POV editing is characterized by a cinematic refinement in relation to ordinary perceptual practices. The second emphasizes the form of POV editing as it is structured to represent the characters' inner worlds. The third interrogates the extent to which POV editing serves the aims of the film narrative (Carroll, 1993, pp. 126–129). The fact that the POV is virtual also affects the film's narrative. In film narratives, it can sometimes be difficult for viewers to grasp which character's perspective the story is trying to convey. The concept of the virtual POV, in this context, warrants critical examination. According to Temenuga Trifonova, in some films the vantage point is virtual, as in *Fight Club* (David Fincher, 1999) or *Memento* (Christopher Nolan, 2000), where it becomes impossible to situate unreal events within a coherent real-time sequence. The viewer may struggle to distinguish between real and virtual perspectives associated with the same character (2002, pp. 14–15). Metz argues that cinematic identification occurs not primarily with the hero but with the camera, within the cinematic apparatus. Scott Bukatman suggests that the use of the virtual camera provides the viewer with experiences that clearly exceed the physical limits of their own perspective, yet are nonetheless subjectively experienced (Trifonova, 2004, p. 9). In this context, the virtual point of view is interpreted according to the viewer's subjective perception. The temporal design in the aforementioned films prompts the viewer to reflect on the process of distinguishing between what is real and what is not. This phenomenon does not occur in every film viewed through VR headsets. The term 'virtual' is applied differently in each of these contexts, and the distinction must be made explicit. In films where the cognitive demands of temporal construction are high, even if a 360° field of vision is provided, the viewer interprets the narrative through their own subjective perceptual process.

Cinematic virtual reality films are regarded as cinematic works that facilitate the concept of 'breaking the fourth wall,' a term used to describe the experience of viewers feeling as if the characters in a film are speaking directly to them. The ability of these films to establish a connection with the viewer is predicated on the premise that they facilitate a meaningful interaction between the filmic medium and the viewer (Bosworth & Sarah, 2019, p. 25). In the context of VR films, the POV adopted enables the character to face the viewer directly, thereby activating the viewer's identification mechanism and facilitating the disruption of the fourth wall. This process culminates in the creation of a hyperrealistic perception of reality. A camera that transcends the physical limits of the viewer's own perspective enables multiple readings of the gaze. According to Akira Mizuta Lippit, VR—when it replaces the world and loses itself within it—will no longer be a technology but a state of existence, a condition (1994, p. 607). While the 360° camera affords multi-directional viewing possibilities, the spaces within the film narrative also require perceptual interrogation. From this standpoint, an examination of cinematic spaces in film narratives reveals that representing screen spaces with three-dimensional depth through cameras capable of showing all directions in 360° opens the way for new conceptualizations in the digital age. One example of this is the personalization of POV in VR storytelling. It is based on the idea that diegetic worlds "actively involve the spectator and position them as if they are the frame of a camera exploring and creating their own stories within the multi-acre diegesis." (Arcagni & D'Aloia, 2021, p. 2). VR headsets allow viewers to watch the film from any POV

they choose. On the other hand, the immersive nature of the POV offered by VR headsets and its impact on the shared experience are being considered from a cinematic POV. Therefore, in order to advance cinematographically, it is necessary to consider the mechanism of the viewer's POV when watching a film through VR headsets (Dorta et al., 2016, p. 219). Based on these statements, considering that the POV in VR is different from the POV on the cinema screen, it can be said that the viewer becomes more interactive with the film in the existing POV in the VR viewing experience. Because the POV in 360° VR films surrounds the viewer, the viewer is able to immerse themselves more deeply in the film's space. At this point, it is necessary to examine the cinematic relationship between the concept of POV and the immersive nature of the viewing experience in 360° VR films.

Viewing experience within hyperreality

Francesco Casetti asserts that in the transformation of spaces in the cinematic viewing experience, the cinematic experience itself has begun to undergo a process of displacement. This displacement is articulated as the emergence of new devices and environments. Social subjects are increasingly inclined to construct their own networks. Arising from a need for relationality, this shift enables cinema to reposition itself, discover new possibilities, and compete with other communication media. While such developments render the viewer more active, Casetti also emphasizes that the cinematic viewing experience remains closely tied to habits (2011, p. 88). In highlighting cinema's capacity to compete with NCTs and noting that cinema spaces are being transformed in this context, Casetti underscores that the uniqueness of the viewing experience carries even greater significance and points to its role in the reception of films. At the same time, the impact of the element of POV on the viewer's perception of reality within this framework must also be taken into consideration. In this context, VR headset technology offers the viewer a multi-channel text. According to Margaret Morse, "the VR user is a viewer whose vantage point is fixed at the station point of an image projection, monocular and stationary, and who is transformed into a moving mediation within three-dimensional space" (1998, p. 182). A multifaceted strategy is required to engage the viewer watching a film with VR glasses. In a film experienced through VR, the viewer can move and navigate in any direction within the film space, creating a hypertextual viewing experience. The concrete visions that spaces create in the mind, as an intense multitude of personal feelings we are unaware of, are described as emotional cartographies (Nold, 2009, p. 10). Participants also create their own emotional cartographies through VR glasses. The emotions or thoughts presented in the film space are mapped using VR glasses, transforming into augmented reality that goes beyond the concrete vision. From this point on, virtual reality begins. The process of making sense of the distinction between reality and the virtual is also contemplated by the viewer within this cartography. On one hand, the viewer may feel a strong sense of interaction with a character in the filmic space; on the other hand, the ability to roam freely within that space can also lead to distraction. While the virtual universe invites the viewer into simulation, it also lays the groundwork for perceiving reality in alternative ways.

Jean Baudrillard defines simulation as the generation of a real without origin or reality through models, describing this as hyperreality. Emphasizing the endless reproduction of realities, Baudrillard argues that rational reality is no longer necessary, as operational reality has taken its place (2011, p. 13–14). Similarly, new media theorists claim that "a simulation is real before it imitates or represents anything" (Dovey et al., 2009, p. 38). Lev Manovich, on the other hand, contends that the tradition of simulation aims not to separate virtual and physical spaces, but to merge them. He argues that these two spaces share the same scale, without their boundaries being emphasized (unlike in the representational tradition, where they are demarcated by a rectangular frame), and that the viewer is free to move within the physical space. Manovich stresses that virtual reality continues the tradition of simulation, and in VR, there is either no connection between the

two spaces (a normal space and an expanded false space) or, conversely, they completely overlap (2001, p. 112–113). As Manovich observes, the two spaces may converge in the viewer's mind. Kate Nash, who presents a parallel idea to Manovich, explains in her research on interactive documentaries that VR allows the user to imagine themselves within the diegesis, creating a sense of reality (Vera & Gutierrez, 2023, p. 113).

These differing perspectives reveal how variable the perception of space can be in virtual reality, prompting reflection on the transformation of three-dimensional perception brought to the art of cinema by VR technology. In today's universe of simulation—particularly in the context of generations growing up immersed in virtual reality—the multi-dimensional VR system behind the screen also signals a mechanism of control. Within this mechanism, while the viewer exists as one who sees and observes, they cannot hold control; it remains in the hands of the creator of the narrative. What changes is the viewer's capacity to look in multiple directions, and the power of hyperreality within this capacity to influence them. Cinema emerges as one of the artistic domains in which this influence can be most intensely conveyed. Cinema, which uses current technologies through intermediality, not only enables the emergence of new narrative forms but also allows the viewer to encounter narratives beyond reality. Chiel Kattenbelt uses the concept of intermediality to describe the interrelationships between different media forms that lead to the redefinition of media forms that influence one another and, consequently, to a renewal of perception (2009, p. 25). From this approach, the viewing experience offered by VR glasses to film viewers shows an example of intermediality. Watching a film shot with a 360° camera with VR glasses is also an indication of the intertwining of NCTs. New forms that affect the art of cinema affect the viewer's experience process. VR glasses now open the doors of another universe to the viewer and say 'welcome to a different dimension of simulation.' With the advancement of technology, the world of cinema, like other fields, is questioning hyperreality in a struggle between the real and the represented (Kaur, 2025, p. 72). The data obtained in the study, in this context, together with what VR technology offers, reveals predictions regarding the anticipated demand and expectations from the viewer's perspective in the near future within the context of this technology.

Aim and methodology

This section presents information about the purpose of the research, the sample, the materials, and the method of data collection and analysis.

Aim

The research questions for this study were formulated within the framework of the scientific project titled "Media Transformation in the Cinema Field in Terms of Viewing Experiences: Predictions, Strategies, and Analyses for the Future," upon which the present article is based. This article, however, constitutes the first phase of the project. The primary objective of this study is to advance film theory through a systematic analysis of the concepts of POV and identification, incorporating both theoretical perspectives and empirical results derived from the scales and survey instruments. Participant selection is conducted according to rigorous scientific criteria to ensure methodological integrity. The central research questions guiding the study are as follows:

RQ1: In terms of POV and identification, how does the difference between the viewing experience in traditional cinema and virtual reality-based viewing experiences shape viewers' preferences in terms of VR technology?

RQ2: In terms of POV and identification, how does the difference in experience between cinema and virtual reality-based viewing experiences shape viewers' viewing preferences?

The differences between the viewing experience with VR headsets and that in a cinema have been examined in the context of the participant's relationship with VR technology, attitudes towards film viewing, and POV. In determining the scales and questionnaire presented in the study, consideration was given to the effect on the viewer of the concept of identification, which is linked to the concept of POV—one of the fundamental elements of cinematography. In this initial phase of the project, the aim is to reach out specifically to film students to determine their general attitudes and expectations regarding NCTs. This will contribute to the film industry or related academic research in the future.

The item-scale development process involved preparing scale items within the framework of the topics examined in connection with the project that formed the basis of the study. The development of these scales aims to identify trends and demands regarding the technological differences in participants' viewing experiences. In line with this objective, the concepts of POV and identification in cinema—which have the potential to be transformed by VR technology—may also evolve. As this topic anticipates future changes in cinematography, it also offers insights into the future of cinema.

Methodology

This research was conducted using a quantitative research method (Binark, 2014; Cozby & Bates, 2015), employing a survey-type and cross-sectional design to collect data. The ethical review of the study was discussed at the meeting of the Istanbul University Social and Human Sciences Scientific Research and Publication Ethics Board on May 22, 2023, and found to be ethically acceptable with decision number 1764642. The participants' voluntary consent forms were obtained using a consent form prepared in accordance with the principles established by the Istanbul University Social and Human Sciences Scientific Research and Publication Ethics Board. The scales developed were designed in accordance with the project's core research questions. Each scale item was developed to address the questions and topics examined within the context of the project.

Data collection and analysis

The data collection phase of the research was carried out online via Google Forms between October and December 2023. All statistical analyses were processed using the SPSS 28 software package, and the significance level was set at $p < .05$. Normality was assessed using Kolmogorov-Smirnov tests, and non-parametric Mann-Whitney U and Kruskal-Wallis H tests were used to analyze between-group differences. During the data analysis, the psychometric properties of the scales employed in the study were initially examined. Subsequently, the findings were analyzed using basic descriptive statistics, and group comparisons were conducted based on participants' gender, class level, and preferences regarding 2D versus 3D (a three-dimensional viewing experience based on the image dimensions of a 360° POV) viewing spaces in movie theaters. To test the psychometric properties of the measurements, exploratory factor analyses were conducted to assess construct validity, and internal consistencies were evaluated using Cronbach's alpha values. Additionally, inter-scale and intra-scale correlations were also calculated to assess construct and convergent validity.

Participants

The study sample consisted of 214 undergraduate students (104 female, 48.6%; 110 male, 51.4%), aged between 18 and 25, who were enrolled in the Departments of Radio, Television, and Cinema at various public and foundation universities in Istanbul and voluntarily agreed to participate in the study. Based on data obtained from the responses to the participant forms sent to universities in Istanbul regarding this section, it was determined that 214 students had fully completed the forms and provided reliable responses. Since the

focus of the study is on the field of cinema, students from this department were selected. Selecting students with a background in this field—who will work in this area and contribute to its theoretical development in the future—is important for the advancement of cinema as well.

The mean age of the participants was 20.23 years ($SD = 1.82$). Female participants had a mean age of 20.35 years ($SD = 1.79$), whereas male participants had a mean age of 20.11 years ($SD = 1.86$). The mean years of education was 14.10 ($SD = 1.22$) for the overall sample (range = 13–16 years), with female participants averaging 14.15 years ($SD = 1.21$) and male participants averaging 14.05 years ($SD = 1.24$). Of the participants, 48.6% were first-year students, 14.5% were second-year students, 15.4% were third-year students, and 21.5% were fourth-year students (see Appendix 1 for details).

In this study, purposive and random sampling techniques (Erkuş, 2013) were used to determine the sample. The participants were recruited from a range of universities, with the majority coming from Istanbul University ($n = 82$; 38%) and Istanbul Beykent University ($n = 56$; 26%). Together, these two institutions accounted for nearly two-thirds of the total sample. The remaining participants were distributed across several universities, including Istanbul Kültür University ($n = 26$; 12.1%), Istanbul Aydın University ($n = 15$; 7.0%), Maltepe University ($n=10$; 4.7%), Marmara University ($n=7$; 3.3%), Istanbul Gelişim University ($n = 7$; 3.3%), and Istanbul Rumeli University ($n=4$; 1.9%). In addition, Altınbaş University contributed 1.4% ($n = 3$), whereas Kadir Has University, Yeditepe University, Beykoz University, and Fenerbahçe University each contributed 0.5% of the sample ($n = 1$).

Materials and process

The data collection tools used in the current study are presented in detail below.

Participant information form

A brief questionnaire was administered to collect basic demographic information from the participants, including age, gender, education level, university, and department. The scales were developed in Turkish; however, since the article is in English, the scales were translated into English by two experts.

Virtual Reality Experience Questionnaire

The Virtual Reality Experience Questionnaire is a brief self-report instrument developed by the researchers to assess participants' experiences with VR technologies. The questionnaire assesses participants' engagement with NCTs in cinema, ownership of VR headsets and related equipment, experiences with playing digital games using VR headsets, experiences with watching movies using VR headsets, and preferred viewing environments in movie theaters (see Appendix 2).

Film Viewing Experiences Scale

The Film Viewing Experiences Scale is a brief, six-item self-report instrument developed by the researchers to assess individuals' experiences of watching films in a cinema context (see Appendix 3a). Participants rated each item on a 5-point Likert-type scale (1 = Strongly Disagree, 2 = Slightly Agree, 3 = Somewhat Agree, 4 = Mostly Agree, 5 = Strongly Agree). The total score ranged from 6 to 30, with higher scores indicating greater sensitivity and selectivity regarding the sense of collectivity before, during, and after the film viewing process.

A high Kaiser-Meyer-Olkin measure of sampling adequacy (0.84) and a significant Bartlett's test of Sphericity, $\chi^2(15) = 297.897$, $p < .001$, indicated that exploratory factor analysis was appropriate. Examination of the factor structure through principal component analysis revealed that all items loaded on a single factor

(see Appendix 3b). Regarding internal consistency and reliability, the scale demonstrated a Cronbach's Alpha coefficient of $\alpha = .78$.

Point of View in Film Narratives Scale

The Point of View in Film Narratives Scale is a brief, 12-item self-report instrument developed by the researchers to assess individuals' perspectives on film narratives created in the context of NCTs, particularly virtual reality applications (see Appendix 4a). Participants rated each item on a 5-point Likert-type scale (1 = Strongly Disagree, 2 = Slightly Agree, 3 = Somewhat Agree, 4 = Mostly Agree, 5 = Strongly Agree).

The scale consisted of two subscales: demand for NCTs in film narratives (dNCTs, 8 items) and preference for NCTs in film narratives (pNCTs, 4 items). Scores ranged from 8 to 40 for the first subscale and 4 to 20 for the second subscale. The total score for the scale ranged from 12 to 60, with higher scores indicating a more favorable perspective toward the use of NCTs in film narratives.

A high Kaiser-Meyer-Olkin measure of sampling adequacy (0.897) and a significant Bartlett's test of Sphericity, $\chi^2(66) = 1962.327, p < .001$, indicated that exploratory factor analysis was appropriate. The factor structure of the scale was examined using Principal Component Analysis, and Varimax rotation revealed that the items loaded onto two factors (see Appendix 4b).

Regarding internal consistency and reliability, the Cronbach's Alpha coefficient was $\alpha = .93$ for the dNCTs subscale (factor 1; 8 items), $\alpha = .81$ for the pNCTs subscale (factor 2; 4 items), and $\alpha = .93$ for the total scale score (see Appendix 4c).

Additionally, inter- and intra-scale correlations were conducted to substantiate construct and convergent validity. Spearman correlation analysis revealed significant positive relationships ($p < .001$) between the subscale scores and the total scores of the corresponding scales (see Appendix 5).

Findings

In the context of research questions, the results of the data obtained from the survey questions and scales are presented below. Data obtained from the Virtual Reality Experience Questionnaire, the Film Viewing Experiences Scale and the Point of View in Film Narratives Scale provide insights into participants' preferences.

Virtual Reality Experience Questionnaire

Participants' frequency of following NCTs in the field of cinema was examined using a 5-point Likert scale. The distribution of responses, from highest to lowest frequency, was as follows: sometimes 46.3% ($n = 99$), often 31.8% ($n = 68$), always 10.7% ($n = 23$), rarely 9.8% ($n = 21$), and never 1.4% ($n = 3$). Overall, the frequency of following NCTs in the field of cinema was relatively low ($M = 3.41 \pm .86$).

With respect to ownership of VR headsets and related equipment, only 5.6% ($n = 12$) of participants reported owning any equipment. Examination of participants' experiences playing digital games using VR headsets revealed that 46.3% ($n = 99$) reported never using VR headsets while gaming, 22.0% ($n = 47$) reported using them a few times, 11.7% ($n = 25$) reported trying them only once, and 1.4% ($n = 3$) reported using them frequently. In addition, 18.7% ($n = 40$) did not respond to this question due to not having a digital gaming habit.

Most participants reported little to no experience watching movies with VR glasses. Specifically, 73.4% ($n = 157$) indicated never having watched a movie with VR glasses, followed by those who had watched a movie a few times 14.5% ($n = 31$), only once 11.2% ($n = 24$), and frequently 0.9% ($n = 2$).

Participants reported a preference for two-dimensional (2D) cinema screens in movie theaters at a rate of 69.2% ($n = 148$; 69 female, 79 male), whereas 30.8% ($n = 66$; 35 female, 31 male) preferred the three-dimensional (3D) viewing environment provided by VR headsets. However, when participants were asked to assume that a film was released simultaneously in both a traditional 2D version and a 3D version viewable via VR headsets, with both options offered at the same time and relatively low ticket price, 54.7% ($n = 117$) indicated a preference for VR-based film experience, while 45.3% ($n = 97$) preferred the traditional 2D experience. These findings suggests that economic factors may play a role in shaping participants' preferences for 2D versus 3D viewing environments in movie theaters.

Film Viewing Experiences Scale

The participants' mean score on the Film Viewing Experiences Scale was 20.30 ± 5.40 (range = 6–30). Item-level frequency and percentage values, along with means and standard deviations, are presented in Table 1. Participants demonstrated a high level of sensitivity and selectivity regarding the atmosphere and sense of collectivity before, during, and after the film viewing process.

Table 1

Descriptive statistics for items of the Film Viewing Experiences Scale

Items	Strongly disagree (1)		Slightly agree (2)		Somewhat agree (3)		Mostly agree (4)		Strongly agree(5)		M (SD)
	n	%	n	%	N	%	n	%	n	%	
1. I try to access information about upcoming films in advance.	17	7.9	19	8.9	41	19.2	58	27.1	79	36.9	3.76 (1.26)
2. I read film reviews written about movies.	20	9.3	32	15.0	48	22.4	58	27.1	56	26.2	3.46 (1.28)
3. The emotions evoked by the place where I watch the film are important to me.	12	5.6	25	11.7	43	20.01	52	24.3	82	38.3	3.78 (1.23)
4. Before the film-viewing process, I try to feel motivated to watch the movie.	32	15.0	35	16.4	51	23.8	44	20.6	52	24.3	3.23 (1.38)
5. After the film-viewing process, I share my thoughts about the movie through traditional media or social media.	81	37.9	46	21.5	42	19.6	23	10.7	22	10.3	2.34 (1.35)
6. I think there is a difference between watching a film alone and watching it collectively in terms of forming a close bond with the characters and the story.	19	8.9	19	8.9	48	22.4	43	20.1	85	39.7	3.73 (1.31)

Between-group comparisons based on the total scale score revealed no significant differences according to participants' class level ($\chi^2(3) = 6.26$, $p = .10$) or preferences for 2D versus 3D viewing environments ($U = 4761.50$, $Z = -.29$, $p = .77$). However, a significant gender difference was observed ($U = 4651.00$, $Z = -2.37$, $p = .018$), with female participants ($M = 22.22 \pm 4.96$) scoring higher than male participants ($M = 19.43 \pm 5.68$).

Point of View in Film Narratives Scale

The participants' mean score on the Point of View in Film Narratives Scale was 41.46 ± 11.15 (range = 12–60). The mean scores for the subscales were 30.36 ± 7.96 (range = 8–40) for demand for NCTs in film narratives and 11.10 ± 4.31 (range = 4–20) for preference for NCTs in film narratives. Item-level frequency and percentage values, along with means and standard deviations, are presented in Table 2. Participants generally expressed positive views regarding the use of NCTs in film narratives.

Between-group comparisons based on the total scale score revealed no significant differences by gender ($U=5339.50$, $Z=-.84$, $p=.40$) or class level ($\chi^2(3)= 3.82$, $p=.28$). Similarly, subscale scores (dNCTs and pNCTs) did not differ significantly by gender (dNCTs: $U=5652.00$, $Z=-.15$, $p=.88$; pNCTs: $U=4843.50$, $Z=-1.94$, $p=.052$) or class level (dNCTs: $\chi^2(3)= 2.77$, $p=.43$; pNCTs: $\chi^2(3)= 5.26$, $p=.15$).

In contrast, significant differences were observed based on participants' preferences for 2D versus 3D environments for both the total scale score ($U=3139.50$, $Z=-4.17$, $p=.000$) and the subscale scores (dNCTs: $U=3538.00$, $Z=-3.15$, $p=.002$; pNCTs: $U=2770.50$, $Z=-5.06$, $p=.000$). Participants who preferred 3D viewing environments for film narratives ($M_{\text{total}} = 46.00 \pm 10.10$; $M_{\text{dNCTs}} = 32.74 \pm 7.39$; $M_{\text{pNCTs}} = 13.26 \pm 3.71$) scored higher on all scales than those who preferred 2D viewing environments ($M_{\text{total}} = 39.45 \pm 11.03$; $M_{\text{dNCTs}} = 29.30 \pm 8.00$; $M_{\text{pNCTs}} = 10.14 \pm 4.23$). These findings support the content validity of the scale by demonstrating that scale scores vary according to participants' preferred viewing environments in movie theaters.

Table 2

Descriptive statistics for items of the the Point of View in Film Narratives Scale

Items	Strongly disagree(1)		Slightly agree(2)		Somewhat agree (3)		Mostly agree 4)		Strongly agree(5)		M (SD)
	n	%	n	%	N	%	n	%	n	%	
1. I seek to experience cinema venues that incorporate emerging communication technologies.	8	3.7	25	11.7	32	15.0	50	23.4	99	46.3	3.97 (1.19)
2. I find it appropriate to use new communication technologies in cinema halls.	4	1.9	18	8.4	37	17.3	60	28.0	95	44.4	4.05 (1.06)
3. The traditional experience of film viewing may manifest in diverse forms, and this mode of spectatorship remains open to transformation.	11	5.1	14	6.5	33	15.4	69	32.2	87	40.7	3.97 (1.14)
4. If virtual reality cinema halls were established, I would go to watch movies.	15	7.0	30	14.0	41	19.2	56	26.2	72	33.6	3.65 (1.27)
5. If virtual reality cinema halls were established, I would stop going to traditional cinemas.	116	54.2	38	17.8	28	13.1	18	8.4	14	6.5	1.95 (1.27)
6. I am willing to pay more to watch films in virtual reality cinema halls.	64	29.9	55	25.7	38	17.8	30	14.0	27	12.6	2.54 (1.38)
7. Virtual reality cinema halls should increase in number within the Turkish industry.	17	7.9	23	10.7	61	28.5	51	23.8	62	29.0	3.55 (1.23)

	Strongly disagree(1)		Slightly agree(2)		Somewhat agree (3)		Mostly agree 4)		Strongly agree(5)		
8. Narratives produced through virtual reality headsets ought to be included in cinematic organizations and festivals.	17	7.9	35	16.4	48	22.4	60	28.0	54	25.2	3.46 (1.25)
9. Film festivals watched with virtual reality headsets should be organized in our country.	9	4.2	27	12.6	46	21.5	46	21.5	86	40.2	3.81 (1.21)
10. I would like to see 360° cameras in film narratives.	15	7.0	18	8.4	35	16.4	50	23.4	96	44.9	3.91 (1.26)
11. I prefer film narratives offered by 360° cameras instead of those presented with 180-degree cameras.	33	15.4	39	18.2	58	27.1	40	18.7	44	20.6	3.11 (1.34)
12. I consider that perceiving the spatial settings and characters of a film narrative through a 360° perspective would enhance my immersion in the cinematic experience.	23	10.7	37	17.3	39	18.2	39	18.2	76	35.5	3.51 (1.40)
Subscale items: Demand for NCTs in film narratives: Items 1, 2, 3, 4, 7, 8, 9, 10. Preference for NCTs in film narratives: Items 5, 6, 11, 12.											

Discussion and conclusion

The findings obtained from the present study reveal several preliminary insights regarding the transformation of the cinematic viewing experience through NCTs. The questionnaire items and scales were developed specifically for this research and are original, having been administered to participants for the first time.

The research question of this study is to examine the relationship between viewing experiences using data derived from questions regarding two distinct viewing experiences and VR technology, and to analyse viewer tendencies regarding these two distinct viewing experiences within the context of the concepts of POV and identification. Based on the findings, these concepts can be theoretically re-examined within the framework of POV and identification, drawing on film theories. The tendency toward individualized viewing experiences is consistent with the high mean scores given to items in the Point of View in Film Narratives Scale related to preferences for viewing experiences involving NCTs, as well as with the fact that the response options “mostly agree” and/or “strongly agree” had the highest percentages (see Table 2). This reflects the curiosity of younger generations toward contemporary technologies and their desire to experience them. At the same time, while VR cinema theaters are emerging, participants who favor traditional theaters indicated they are unwilling to pay extra to watch films in VR settings. These findings indicate that while cinema’s existence remains significant in the digital era, the practices of VR technology in the field of cinema are still at an early stage. In light of the results, the need for structuring cinema theaters with updated technological infrastructure and for planning in accordance with the requirements of the digital age can also be discerned. Benjamin argues that the fact that works of art can be reproduced with the help of technology has changed the public’s relationship with art (2012, p. 69). What VR technology offers also changes the viewer’s relationship with cinema. The cinema field that uses this technology reminds the viewer of the existence of transforming technology and also reminds them that it is necessary to question the new with critical approaches.

Virtual Reality Experience Questionnaire reveals participants' relationship with virtual reality, they also highlight issues that warrant further consideration in the context of cinema and VR technology. Participants who strive to keep up with NCTs in the cinema sector but do not have a particularly strong connection with digital games have indicated that they might be more inclined to seek out a 3D viewing experience. In this context, the pricing policies offered by the cinema sector regarding the viewing experience play a significant role in participants' preferences. Given the illusionary effect that 360° videos create on viewers (Barreda-Ángeles et al., 2021, p.155) and considering the importance of the sense of immersion in VR cinema environments, it is evident that the participants' comments are significant in the context of three-dimensional film narratives in terms of future demand (Romano et al., 2025, p.6). Participants interested in the VR film viewing experience have the potential to increasingly turn to VR technology as it becomes more user-friendly in the cinema sector and adopts a more cinematic narrative approach.

Theorists argue that we must consider NCTs for the future. Bordwell and Thompson remind us that classical narrative cinema has functionally adapted to technological innovations by accommodating itself to different media and technologies (Elsaesser, 2006, p. 14). Consequently, keeping pace with technological developments in all areas of cinema has become important both for the audience and for enhancing production within the context of the industry. Furthermore, as Terry Flew points out, technologies inevitably intersect with cultures (2002, p. 37). Considering the participants' age groups, it can be observed that they were born into a world surrounded by digital media and thus experience life in constant interaction with what technology offers. For this reason, when cinema theaters are presented to audiences equipped with contemporary NCTs, their cinema-going habits appear open to transformation. Highlighting the freedom of the spectator, Jacques Rancière describes "the blurring of the boundary between those who act and those who watch, between the individual and the members of a collective structure" (2015, p. 23). Following Rancière's line of thought, just as cinema has developed since its inception and become, in many respects, a freer medium, the spectator too has attained a liberated position—able to relate to cinema through an understanding of the contemporary. Similarly, the operationalization of electronic, digital, and multimedia technologies (Van Dijk, 2009, p. 205) underscores that the liberated and transformed spectator is in a close and inevitable relationship with technology. These changes in the spectator's relationship with cinema also affect how they engage with the elements of film narrative that shape the viewing experience. The dataset also includes examples of this interaction. According to the findings obtained from the Point of View in Film Narratives Scale, the items "I think there is a difference between watching a film alone and watching it collectively in terms of forming a close bond with the characters and the story" and "The emotions evoked by the place where I watch the film are important to me" received the highest percentage of "Strongly agree" responses (see Table 1). The fact that elements such as character, story, and filmic space influence the viewer determines their interconnectedness with the technological medium through which the film is presented. When comparing a film shown on a two-dimensional cinema screen with one viewed through 3D VR headsets and shot using a 360° camera, it becomes that the elements within the cinematic space influence the viewer's overall viewing experience. The growing demand for NCTs in cinemas indicates that the traditional cinema-going experience is also beginning to change. With the emergence of VR-based cinemas, viewers have made their expectations regarding such immersive spaces a priority.

When participants consider the possibilities regarding the difference between the POV of a camera providing a 180° image and that of a 360° camera, this leads them to choose the POV that offers a 360° image. It is even argued in conventional cinema that the formula "POV = identification" needs to be reconsidered (Hart, 2018, p. 75). For VR films where contemporary narrative strategies can be employed, the 360° POV allows the sense of identification to be experienced more intensely on an individual level, enabling the viewer to engage more deeply with the technology; this explains the growing demand for

viewing experiences using VR headsets. The existence of VR-based cinema spaces within the Turkish film industry suggests that participants view this development favourably.

In the context of Dziga Vertov's statements, cinema in the digital age undergoes a transformation alongside the concept of hyperreality within a fluid temporality, while the camera's point of view also changes in parallel with the prevailing understanding of the world: "I am an eye. A mechanical eye... Freed from the constraints of time and space, I arrange every point of the universe as I wish. My path is the creation of a new perception of the world" (1984, p. 17). The reason why the perception of hyperreality becomes particularly pronounced in films shot with 360° cameras lies in the viewer's ability to navigate within the three-dimensional space, forming an identification with the character that feels as if it were real. Unlike 2D films, VR films offer interaction and exploration (Haywood & Cairns, 2006); aesthetic and sensory appeal (Hull & Reid 2018; Laarni et al., 2004); and socialization and communication with others (Haywood & Cairns 2006; Hull & Reid 2018), for example, by allowing interaction with CGI characters (avatars) (Carpio et al., 2023, p. 3187). When assessing the impact of VR technology on the viewer's relationship with cinema, theorists have noted that a three-dimensional film narrative is perceived as particularly engaging from the viewer's POV. The data obtained in the study also shows that productions related to VR technology and the anticipated developments related to this technology in the future will attract interest. Given that people find cinematic VR—produced using VR technology—both exciting and unsettling (Ding et al., 2018, p.1578), we can conclude that this technology has not yet fully matured. Consequently, as the majority of participants do not frequently use this technology whilst watching films, they are not accustomed to its cinematography. Just as the first audiences to encounter cinema through *L'arrivée d'un train en gare de La Ciotat* (Auguste & Louis Lumière, 1895) experienced a fear-filled thrill—feeling as though the train were coming toward them and, for the first time, identifying with a film—viewers watching a film through VR headsets for the first time also report feeling fear, while simultaneously expressing excitement. According to Mary Ann Doane, sound functions like the mother's voice that surrounds and envelops a person even before birth; in addressing states of the unconscious, such as voice-off, voice-over, and interior monologue, it allows sound to be examined as an active envelope (Elsaesser & Hagener, 2010, p. 261). When this approach is considered in the context of the technological narrative language used in a film shot with a 360° camera, it leads to the conclusion that a film viewed through a VR headset—enveloping the viewer's perception and gaze like an active envelope—possesses a more immersive technology than a two-dimensional film narrative. Similarly, academic and VR pioneer Brenda Laurel demanded that true VR offer a 360° field of view, stereoscopic 3D, spatial audio, separate body and eye movement, an uninterrupted first-person POV, natural gestures and movements, narrative impact, and the ability to engage in actions with consequences (Larsen, 2018, p. 74). When examined using the Film Viewing Experiences Scale, the data from this study show that the demand for VR in cinema can be explained by the opportunities this technology offers. The importance of the space where the viewing experience takes place for participants, and their tendency to share their post-film thoughts via social media, demonstrates that participants are as interested in film-related details as they are in the film's narrative strategy. For this reason, the Turkish film industry may consider creating environments that facilitate the use of these new technologies in cinemas in the coming years. Given the data indicating a difference between group and individual viewing experiences, narrative strategies may also be revisited, leading to the development of designs based on new narrative structures. From a POV, cinematic details such as characters, film setting, story, and plot will influence the viewer's 'identification' process; therefore, screenplays must be designed accordingly. From this perspective, the way in which the viewer perceives the sense of reality offered by VR headsets also varies. Confronted with a layered augmentation of reality, the viewer enters another dimension of reality within hyperreality. According to Scott Bukatman, in the world of the future, technology appears to possess its own agenda, proceeding to inscribe itself onto the bodies of

its “guests.” This process also permits them to experience illusions that feel like genuine bodily experiences. Walt’s immense paraspatial and cybernetic realm, Disney World, constitutes a visible, malleable, and self-regulating interface of the terminal space (1991, p. 78). This interface manifests in various ways in the worlds experienced through VR headsets, continually seeking to draw viewers into the multi-surfaced structure of cyberspace. The illusions of bodily experiences occurring in the cyber dimension may offer the viewer multiple readings within their mind and perception. At this point, it can be argued that the intermediality offered by NCTs in the art of cinema has, up to the present, begun to alter and transform the perceptual system related to the body and sensation. Among the technologies affecting this change and transformation are those afforded by VR headsets.

The findings indicate that the use of NCTs in cinema and the meeting of contemporary narrative conventions with viewers who prefer individualized viewing experiences tend to increase the desire to experience otherworldly realms that emerge in various forms in the digital environment. Even within the frameworks of both formalist and realist traditions, cinema in the digital age offers the effect of hyperreality, enabling all such debates to converge on common ground. The participants’ expressed interest in watching films shot with 360° cameras, their preference for individual viewing over collective viewing, their tendency to refrain from sharing post-viewing reflections on films through media channels, and their inclination to experience the possibilities offered by NCTs within the digital world all point to the fact that cinema’s codes will likewise change in an evolving world. The fact that the present research was conducted with a sample limited to university students studying cinema in a single province in Türkiye is among the study’s limitations. Nonetheless, it is considered important within the scope of the study to prioritize exploring what VR technology can contribute to the field of cinema, especially for students who will be employed in the industry and academia in the future. More comprehensive future research involving experts from the field or individuals from different ages and educational backgrounds will clearly contribute to the discipline.



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Appendix | Ek

Appendix 1. Frequency and percentage values of participants by age and education level

Participants	Female	Male	Total
Age	n %	n %	n %
18 years	27 26.0	21 19.1	48 22.4
19 years	20 19.2	16 14.5	36 16.8
20 years	16 15.4	24 21.8	40 18.7
21 years	15 14.4	26 23.6	41 19.2
22 years	13 12.5	9 8.2	22 10.3
23 years	9 8.7	6 5.5	15 7.0
24 years	2 1.9	6 5.5	8 3.7
25 years	2 1.9	2 1.8	4 1.9
Education level	n %	n %	n %
1st Year	48 46.2	56 50.9	104 48.6
2nd Year	13 12.5	18 16.4	31 14.5
3rd Year	22 21.2	11 10.0	33 15.4
4th Year	21 20.2	25 22.7	46 21.5

Appendix 2. Virtual Reality Experience Questionnaire in Turkish

Lütfen aşağıda sizden istenen bilgileri eksiksiz bir şekilde doldurunuz.

Sinema alanında yeni iletişim teknolojilerine dair haberleri takip ediyor musunuz?

Hiçbir zaman () Nadiren () Bazen () Sık sık () Her zaman ()

Sanal gerçeklik gözlükleri ve ilgili yardımcı ekipmanlara sahip misiniz? Evet () Hayır ()

Sanal gerçeklik gözlükleri ile dijital oyun oynama deneyimi yaşadınız mı? Aşağıdaki seçeneklerden hangisi sizin için en uygun seçenek olur?

Hiç kullanmadım () Sadece bir kez denedim () Birkaç kez oynadım ()

Sıklıkla oynarım () Dijital oyunları her zaman sanal gerçeklik gözlüğü ile oynarım ()

Sanal gerçeklik gözlükleri ile bir film izleme deneyimi yaşadınız mı? Aşağıdaki seçeneklerden hangisi sizin için en uygun seçenek olur?

Sanal gerçeklik gözlükleri ile hiç film izlemedim ()

Sanal gerçeklik gözlükleri ile sadece bir kez film izledim ()

Sanal gerçeklik gözlükleri ile birkaç kez film izledim ()

Sanal gerçeklik gözlükleri ile sıklıkla film izlerim ()

Sinema filmlerini her zaman sanal gerçeklik gözlükleri ile izlerim ()

Sinema salonlarında hangi mekan boyutunda film izlemeyi tercih edersiniz?

2 boyutlu sinema perdesi ()

3 boyutlu sanal gerçeklik gözlüğünün sunduğu film mekanı boyutu ()

Farz edin ki bir filmin hem geleneksel 2 boyutlu versiyonu hem de 3 boyutlu sanal gerçeklik gözlüğü ile izlenebilecek versiyonu aynı anda vizyona giriyor ve ikisinin de bilet fiyatı aynı ve oldukça düşük bir bilet fiyatı ile izleyiciye sunuluyor. Bu durumda hangisini tercih ederdiniz?

2 boyutlu geleneksel film deneyimi ()

3 boyutlu sanal gerçeklik gözlüğünün sunduğu film deneyimi ()

Appendix 3a. Film Viewing Experiences Scale in Turkish

	Hiç katılmıyorum (1)	Çok az katılmıyorum (2)	Biraz katılmıyorum (3)	Oldukça katılmıyorum (4)	Tamamen katılmıyorum (5)
1. Vizyona girecek filmlerle ilgili bilgilere önceden erişmeye çalışırım.					
2. Filmlerle ilgili yazılan film eleştirilerini okurum.					
3. Filmi izlediğim mekânın bana hissettirdiği duygu durumları benim için önemlidir.					
4. Film izleme süreci öncesi kendimi filmi izlemek için motive olmuş hissetmeye çalışırım.					
5. Film izleme süreci sonrası, filmle ilgili düşüncelerimi geleneksel medya aracılığıyla ya da sosyal medya aracılığıyla paylaşıyorum.					
6. Filmlerdeki karakterlerle ve öyküyle yakın bağ kurmada, filmi tek başına izlemekle, kolektif bir şekilde izlemek arasında fark olduğunu düşünürüm.					

Appendix 3b. Film Viewing Experiences Scale: Item-total statistics and EFA results

Items (N=214) $\alpha=.78$	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if item deleted	Communality values*	Factor loadings*
1	16.5374	21.555	.518	.286	.752	.465	.682
2	16.8411	20.594	.598	.376	.733	.570	.755
3	16.5187	20.880	.604	.392	.732	.578	.760
4	17.0701	20.169	.576	.357	.738	.544	.738
5	17.9579	21.712	.449	.209	.770	.372	.610
6	16.5701	22.002	.446	.205	.770	.369	.608

*Eigenvalues above 1 were considered as constituting a single factor.

**Extraction Method: Principal Component Analysis.

The Total Factor Explained showed 48.33% of the variance with an Eigenvalue of 2.900.

Appendix 4a. Point of View in Film Narratives Scale in Turkish

	Hiç katılmıyorum (1)	Çok az katılıyorum (2)	Biraz katılıyorum (3)	Oldukça katılıyorum (4)	Tamamen katılıyorum (5)
1. Yeni iletişim teknolojilerinin kullanıldığı sinema salonlarını deneyimlemek isterim.					
2. Yeni iletişim teknolojilerinin sinema salonlarında kullanılmasını doğru bulurum.					
3. Geleneksel film izleme deneyimi farklı şekillerde de gerçekleştirilebilir, bu seyir deneyimi değişime açıktır.					
4. Sanal gerçeklik sinema salonları yapılırsa, film izlemeye giderim.					
5. Sanal gerçeklik sinema salonları yapılırsa, geleneksel sinema salonlarına gitmekten vazgeçerim.					
6. Sanal gerçeklik sinema salonlarında film izlemeye daha fazla para vermeye hazırım.					
7. Sanal gerçeklik sinema salonları Türk Sinema Endüstrisi'nde çoğalmalı.					
8. Film anlatılarının sanal gerçeklik gözlükleriyle yapılanları sinema organizasyonlarında bulunmalı.					
9. Sanal gerçeklik gözlükleriyle izlenen film festivalleri ülkemizde gerçekleştirilmeli.					
10. 360 derece kameraları film anlatılarında görmek isterim.					
11. 180 derece kamera sunumu yerine 360 derece kameranın sunduğu film anlatılarını tercih ederim.					
12. Bir film anlatısında filmin içindeki mekanları ve karakterleri, 360 derece bakış açısıyla görmek, beni filmin içine daha çok çekecektir diye düşünürüm.					

Subscale items: Demand for NCTs in film narratives: Items 1, 2, 3, 4, 7, 8, 9, 10. Preference for NCTs in film narratives: Items 5, 6, 11, 12.

Appendix 4b. Point of View in Film Narratives Scale: Item-total statistics and EFA results

Items (N=214) $\alpha=.93$	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if Item Deleted	Communality Values*	Factor 1**	Factor 2**
1	37.5000	106.383	.670	.664	.920	.695	.830	
2	37.4206	107.954	.690	.705	.919	.718	.843	
3	37.5000	107.923	.639	.635	.921	.657	.809	
4	37.8131	103.251	.754	.636	.916	.660	.729	

Items (N=214) $\alpha=.93$	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if Item Deleted	Communality Values*	Factor 1**	Factor 2**
5	39.5140	113.969	.322	.414	.934	.696		.828
6	38.9299	104.366	.641	.573	.921	.699		.775
7	37.9159	103.110	.783	.757	.915	.717	.763	
8	38.0047	102.418	.802	.756	.914	.725	.716	
9	37.6589	103.221	.795	.788	.915	.745	.788	
10	37.5607	102.557	.792	.730	.915	.724	.761	
11	38.3598	104.344	.661	.652	.920	.662		.726
12	37.9626	102.224	.710	.674	.918	.638		.619

*Eigenvalues above 1 were considered as constituting a single factor.

**Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**The extracted two sub-constructs accounted for 69.46% of the total variance, which for the Factor 1 explained 56.85% of the variance with an Eigenvalue of 6.822 and Factor 2 explained for 12.61% of the variance with an Eigenvalue of 1.513.

Appendix 4c. Point of View in Film Narratives Scale: Within subscales item -total statistics

Items (N=214) $\alpha=.93$	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if item deleted
1	26.3972	49.602	.737	.651	.928
2	26.3178	50.913	.751	.699	.927
3	26.3972	50.748	.702	.617	.930
4	26.7103	48.526	.751	.599	.927
7	26.8131	47.937	.815	.746	.922
8	26.9019	48.051	.795	.740	.923
9	26.5561	48.06	.825	.783	.921
10	26.4579	48.127	.786	.680	.924
Items (N=214) $\alpha=.81$	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if item deleted
5	9.1495	12.466	.509	.371	.819
6	8.5654	10.763	.660	.461	.752
11	7.9953	10.465	.730	.622	.718
12	7.5981	10.805	.636	.591	.764

Appendix 5. Correlation matrix for total scale and subscale scores

	1	2	3	4
1. Film Viewing Experiences Scale total score	1.00			
2. Point of View in Film Narratives Scale total score	.36*	1.00		
3. dNCTs Subscale score	.37*	.95*	1.00	
4. pNCTs Subscale score	.26*	.83*	.63*	1.00
* p<.001; NCTs: new communication technologies, dNCTs: demand for NCTs in film narratives, pNCTs: preference for NCTs in film narratives				