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THE RELATIONSHIP OF SCREEN MATERIAL

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**THE RELATIONSHIP OF
SCREEN MATERIAL WITH VISITOR BEHAVIOR
IN EXHIBITION SPACES**

A Master's Thesis

By

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ANKARA

April 2022

To my family



THE RELATIONSHIP OF
SCREEN MATERIAL WITH VISITOR BEHAVIOR
IN EXHIBITION SPACES

The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University

by

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ANKARA

April 2022

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By Evrim Karacan

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Fine Arts in Interior Architecture and Environmental Design.

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ABSTRACT

THE RELATIONSHIP OF SCREEN MATERIAL WITH VISITOR BEHAVIOR IN EXHIBITION SPACES

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The screen, with its diverse forms and materials, has been a part of the exhibition space as art practice as well as an integral part of human beings' lives. The purpose of this study is to investigate the impact of the screen materials on space formation through observing different screen materials and explore the relationship between the materials of screens and visitor, by addressing visitor behavior that is divided as attention and interaction in exhibition spaces. Previous studies were mostly elaborated in the field of media and art, and few research was found in the architecture field. Therefore, this study seeks to present a comprehensive approach by gathering media, art, and architecture perspectives together in the visitor studies in the context of exhibition spaces. An exhibition experiment was designed, and different instruments were used in the assessment of the participants' behavior, experience, and feelings. A total of 32 participants were selected based on defined demographic parameters. The findings of this study presented that, the profession item showed a significant correlation with the screen preferences and screen materials have an impact on the architectural layout from visitors' perspective in terms of its physical form and its influence on the layout. Lastly, screen materials have a significant impact on the amount of attention paid as well as on the number of visitor interactions with exhibit objects in exhibition spaces.

Keywords: Exhibition Space; Material; Screen; Space Formation; Visitor Behavior

ÖZET

SERĞİ MEKANLARINDA EKRAN MALZEMESİNİN

ZİYARETÇİ DAVRANIŞI İLE İLİŞKİSİ

Karacan, Evrim

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Farklı formları ve malzemeleriyle ekran, insan yaşamının ayrılmaz parçası olduğu kadar bir sanat pratiği olarak sergi alanının da parçası olmuştur. Bu çalışmanın amacı, sergi mekanında farklı ekran materyallerini gözlemleyerek, ekran materyallerinin mekan oluşumuna etkisini araştırmak, ve ziyaretçi davranışını dikkat ve etkileşim kapsamında ele alarak ekran materyalleri ile ziyaretçi arasındaki ilişkiyi araştırmaktır. Önceki ekran çalışmaları çoğunlukla medya ve sanat alanında yapılmış olup, mimarlık alanında daha az araştırmaya rastlanmıştır. Bu nedenle bu çalışma, sergi mekanlarında ziyaretçi çalışmalarını da içine alarak medya, sanat ve mimarlık perspektiflerini bir araya getiren kapsamlı bir yaklaşım sunmayı amaçlamaktadır. Çalışma kapsamında bir sergi deneyi tasarlanmış olup ve katılımcıların davranış, deneyim ve duygularının değerlendirilmesinde çeşitli araçlar kullanılmıştır. Tanımlanan demografik parametrelere uygun olarak bu çalışmaya toplam 32 katılımcı seçilmiştir. Bu çalışmanın bulguları, meslek ögesinin ekran tercihleri ile önemli bir ilişki gösterdiğini, ve ekran materyallerinin fiziksel form ve yerleşim açısından sergi mimarisi üzerinde etkili olduğunu göstermiştir. Son olarak, ekran yerleştirmelerinin materyallerinin, sergi mekanlarında ziyaretçi dikkati ve etkileşim sayıları üzerinde önemli bir etkiye sahip olduğuna ulaşılmıştır.

Anahtar Kelimeler: Ekran; Materyal; Mekan Oluşumu; Sergi Mekanı; Ziyaretçi

Davranışı

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CHAPTER I

INTRODUCTION

1.1. Problem Statement

The screen is a component piece of architecture, rendering a wall permeable to ventilation in new ways: a “virtual window” that changes the material of built space, adding new apertures that dramatically alter our conception of space and (even more radically) of time.

Anne Friedberg, The Virtual Window (2006)

We now live in an age where screen pervades our contemporary lives. Not only public or private, but we are surrounded by screens everywhere. Its roots go back even before the invention of the still and moving image, and it takes us to camera obscura images, panoramas, and dioramas. It has become such a natural part of us that we don't react to their presence even in the most unexpected space. In addition, the quality of the experience it offers increases everyday with the advancing technology. From the resolution to the physical appearance, this evolving entity presents a different experience every time in different forms in different places. Exhibition spaces are one the places that become sites of screening practices by experimenting various applications that highlights the aesthetic understanding of the screen (Bruno, 2020). These experiments allow to be more creative by expanding the size of screens, changing the appearance diverging from mainstream materials, enhancing the capacity addressing more senses with different features.

A variety of perspectives for defining the screen and its characteristics have been presented throughout the history in art, media, architecture fields. While previous

studies examining the screen, they generally referred to the material of screen and explored the materials using different concepts. Although screen studies have been done in different fields, similar arguments have been echoed that the screen has its own material aspects and in relation to that, its characteristics depends on the change in its material characteristics (Bruno, 2020; Friedberg 2006; Huhtamo, 2004; Manovich 2001; Mondloch, 2010). Having said that, screens can be seen as part of the architectural space in which they are presented and have an influence in that space (Parry & Sawyer, 2005; Sæther & Bull, 2020; Verhoeff, 2019; Wodiczko, 2006). These important findings and theories prepared a ground for the current study by exploring more generalized or case-specific approaches. The perception of the material and space formation by the visitor and visitor's behavior accordingly are another substantial topic in this study. Regarding the visitor behavior, attention and interaction are the indicators of visitor's experience in the exhibition space. In this regard, previous studies on this have shown that the visitor is regarded essential for completing the exhibit object in the exhibition space (Reiss, 2000) and attention and interaction are influenced by different components as exhibit object, exhibition space and visitor characteristics (Bitgood, 1992; 2002; 2010; Bitgood, Patterson & Benefield, 1988; Falk and Dierking, 1992; Hooper-Greenhill, 2000).

This study on the other hand approaches screens as more than an image in media field, or a standing object in design field, or a division in architectural field, or an exhibit in art field, but addressing all these aspects together. While addressing the issue, different screen installations from history have been also presented to make a comparison with the current study. In addition, the lack of quantitative studies in this multidisciplinary field is one of the motivations of this study. Overall, this study intends to contribute to the existing literature by exploring the intersection of architecture, media, and visitor studies in the exhibition context with both quantitative and qualitative approaches.

1.2. Aim of the Study

There are two main aims of this study, one of them is to investigate the impact of the screen materials on space formation through observing different screen materials in exhibition spaces. Although there are various studies focusing on the screen, these previous studies were mostly elaborated in the field of media or art and few research can be found in the architecture field. Therefore, this study seeks to present a comprehensive approach by gathering media, art, and architecture perspectives together in the context of exhibition spaces. By being a material entity as exhibit object in the exhibition space (Mondloch, 2010), screen also creates an environmental situation or spatial encounter (Verhoeff, 2019) and becomes part of the architectural space (Sæther & Bull, 2020).

The second aim of this study is to explore the relationship between the materials of screens and visitor, by addressing visitor behavior that is divided as attention and interaction. According to the previous literature, visitor is regarded essential for the completion of the exhibit object (Reiss, 2000) and therefore the visitor experience is the key in this study. There are various research focusing on attention (Bitgood 2002; 2010; Bitgood, Patterson & Benefield, 1988; Falk and Dierking, 1992; Koran et al., 1984; Mehrabian, 1976) and interaction (Bitgood, 1992; Hein, 1998; Hooper-Greenhill, 2000) from the perspectives of exhibit object, exhibition space and visitor. However, these were presented as general aspects and very few studies focuses on the screen in exhibition spaces (Bishop, 2019; Mondloch, 2010; Reiss, 2000; Verhoeff, 2019). Therefore, this study seeks to fill this gap by exploring the screen-visitor relationship with quantitative research in the context of exhibition studies. This study examines screen-visitor relationship where screen is not considered only as a visual condition, but also reveals material and spatial conditions and all these purposes may help to expand screen practices in exhibition spaces.

1.3. Structure of the Thesis

This thesis includes seven chapters. The first chapter is the ‘Introduction’ that briefly gives an overview of the subject and consists of the problem statement, the aim of the study, and the structure of the thesis.

The second chapter ‘Screen Materials’ consists of three parts and presents a literature review on the screen and its different aspects. The first part ‘The Characteristics of the Screen’ introduces the notion of screen with different screen definitions from the perspectives of art, media, and architecture to have a general understanding of the screen in this study. The second part ‘Screen in the Exhibition Space’ is the part where the screen presence in exhibition spaces has been presented with different screen installations of different artists in history. The third and last part ‘Screen Materials on Space Formation’ discusses the screen’s impact on the architectural layout with its material characteristics in exhibition spaces within the context of the previous literature found in this study.

The third chapter ‘Screen and the Visitor Behavior’ is composed of two parts and the first part ‘Screen and the Viewer’ presents literature review specifically on the screen-visitor relationship by examining the screen's earlier forms and how it evolved to be placed in exhibition spaces. As mentioned previously, visitor behavior was divided as attention and interaction, and it examined from these perspectives in this study. Therefore, the second part ‘Visitor Behavior: Attention and Interaction’ focuses more on the general visitor attention and interaction aspects and its parameters in exhibition spaces found in the previous research.

The fourth chapter ‘Methodology’ covers the methodology of this study and consists of seven parts by presenting the research questions and hypotheses of this study. All information related to the participants, instruments, setting and equipment and procedure provided in this chapter. Also, it presents the framework of the study along with the screen scenarios developed by the researcher.

The fifth chapter ‘Results’ addresses the findings of this study. The findings related to the screen materials, screen preferences, visitor attention and interaction analyzed within four parts and two sub-parts in this chapter.

The sixth chapter ‘Discussion’ presents the findings reached in the previous chapter along with the existing literature within the hypotheses. Similar and different research studies are also discussed by comparing the current study findings in order to achieve a more comprehensive and supported study.

The seventh and last chapter presents a general view of the current study and summarizes all the chapters mentioned above. It also includes suggestions for further research in this area and limitations that have been faced throughout the process of this study. All supported materials related to this research are included in the appendices part.

CHAPTER II

SCREEN MATERIALS

This chapter briefly presents a literature review on the screen and its different aspects. Firstly, characteristics of the screen introduced different screen definitions from different perspectives to have a general understanding of the screen in this study. Then, with a closer approach, screen's presence in exhibition spaces has been demonstrated with different screen exhibition examples from different artists in history. Lastly, screen's presence in the exhibition space were examined from the space formation perspective for further exploration of screen material's influence on the architectural space.

2.1. The Characteristics of the Screen

From cave paintings to modern haptic surfaces or VR technologies, screen is the object covering daily life of human beings. If ocular centrism is one of the approaches dominating human beings' way of living, screen is the apparatus or the object which might be accepted as one of the main interaction tools to receive information, enjoyment and perhaps to address some senses. For example, in a train station or in a bus station, even without backlight as we got used to seeing it in this tool, some screens are showing people information about the trains or busses, such as its departure time. In this mode of operation of the screen, human beings accept the screen as a part of the pathway of getting information. Further, with the birth of the cinema, screen as a tool of enjoyment, a projected light which comes from a lightbulb, entered human beings' life. People started to sit in front of the silver screen to get some joy. From another perspective, more than screen printing

technologies, the apparatus screen became a part of artistic journey on different artworks, and it depicted itself as an object of sense through the perspective of the artist and audience. Nowadays, the screen is covering all the different features that people get used to in their daily life. In fact, it has become an integral component of people's daily life. It adds to its value day by day becoming a communication tool located physically in people's hands, walls in their houses, even in cars and produces meanings beyond its boundaries as it is mentioned as "a window that opens onto a space beyond the frame" (Mondloch, 2010, p: xiii).

Characteristics of the screen is a debatable subject in many different manners. From every other perspective, academics, artists, media researchers are defining screens with various concepts. These various perspectives construct a framework which contains different characteristics of screen helping to understand it as a notion. From the perspective of academics, screen as an informational space or surface, is defined as the object of information that people collect knowledge. Erkki Huhtamo who is a media researcher, media archaeologist and academic expands the definition of the screen as more than an informational surface:

Although screens are two-dimensional surfaces, they often give us an impression of a three-dimensional reality somehow accessible through the screen. Screens are also framed, which metaphorically associates them with paintings or windows – a screen is often conceived as a kind of virtual window opening to a mediated realm. (Huhtamo, 2004, p: 34)

Furthermore, he mentions the contextual meaning of the screen by referencing philosopher Vilém Flusser as: "...Flusser has remarked, screens also have some characteristics of the door – they let us 'enter' the realm they depict." (Huhtamo, 2004, p: 34). These remarkable points on defining the screen by covering its material characteristics, context, and reality. It shows the journey about the screen from its presence in the physical world and its features to contextual meanings that people can interact with. The interaction of screen in the context of meanings and information, is defined through virtuality and matched with the characteristics of the door, it attributes the screen's meaning as expanding its physical boundaries to a sphere of information allowing it to enter more than being a frame.

In fact, Huhtamo's approach tends to be closer to the media field even if it was mentioned with dimensions. To look at from a more physical presence perspective, Giuliana Bruno talks about the screen by considering the history of it:

The history of the screen's evolution teaches us that what we now call screen, and understand to be a projective surface, originated in the world of objects, material space, and interior design. The screen was a thing. It was an object of furniture, a domestic item that inhabited interiors. It specially acted to negotiate inside and outside, and it materially transformed space. (Bruno, 2020, p: 41)

Bruno's approach emphasizes the characteristics of the screen with its physical presence to the relation of the space. The approach like "screen was a thing" (Bruno, 2020) highlights the screen material in a space to examine one of the inherent features of the screen by expanding the concept to more than its content. These explanations and inferences make the screen as part of "interior" spaces for example, as part of art galleries, houses and many other public or personal spaces.

In addition to Huhtamo and Bruno's approach, there are various definitions which examine the characteristics of the screen by highlighting its material. For example, the origins of the word screen were traced to medieval Europe, with subsequent variations and meanings, and evolved from an earlier Germanic root that also transferred to Latin languages (Bravo, 2003). The screen was defined by The Century Dictionary and Cyclopaedia, published originally in 1899, as 'a covered framework, partition, or curtain, either movable or fixed, and surface upon which images may be cast by a magic lantern' (1911). Another definition was made by Vachel Lindsay (2000) as 'an architecture-in-motion which creates and conveys surfaces and textures', and it was followed by various definitions such as 'a flat, rectangular surface' (Manovich, 2001; Chateau & Moure, 2016), 'a floor-standing piece of furniture, consisting of a sheet of lighter, often translucent material (paper, some kind of fabric) stretched on a frame' (Huhtamo, 2004), 'a material entity' (Mondloch, 2010) and 'environmental situation' (Verhoeff, 2019).

All the definitions which are made by different origins contribute to the framework of the screen from various perspectives. Huhtamo's dimension and window and door representation by Vilém Flusser is also creating a concept examining the physical presence and entity. By considering the dictionary and historic definitions, the screen is defined through its physicality and material characteristics. In addition, these explanations show that the screen cannot be described without its physical existence and its relation to architecture even etymologically. Jacques Rancière underlines the screen with its material and architectural relation with the term "surface of design" referring to the surface condition, mediality in architecture. (Rancière, 2009). Further, Giuliana Bruno expands Rancière's arguments by mentioning: "The origin of the term points to a great variety of media, surfaces, and types of screening, mostly emerging from the material world of architecture" (Bruno, 2020, p: 39). Analogously, looking back to the history, Moholy-Nagy states that the screen is a material architecture that emerges in dialogue with the exhibition practices (1925).

Last but not least, Kate Mondloch covers the screen as: "The screen, then, is a curiously ambivalent object—simultaneously a material entity and a virtual window; it is altogether an object which, when deployed in spatialized sculptural configurations, resists facile categorization" (Mondloch, 2010, p: 2). Besides, a previous study by Marks also underlines the screen by defining it as a skin that emphasizes its material presence (2016). Resisting easy categorization, all the efforts to define the screen can be summarized as a framework as: the screen is a thing which has its own material characteristics and spatiality, owns its content, depicts some physical features, holds its own mediality in some contexts. From all the definitions and approaches the outstanding feature of the screen might be accepted as its physical presence and the relation with spaces.

2.2. Screen in the Exhibition Space

Definitions and characteristics of the screen are depicted with many features.

However, there are lots of distinctive features about its content, the screen shines out its physical presence. This feature makes the screen as a spatial object underlying the materialistic feature in a relation with a space.

Screens are placed in human beings' daily life vision as it is mentioned. In particular, informative screens which are located in public spaces such as led traffic screens, advertising boards or individually used screens which are TVs, computer screens, mobile phones might be accepted as one of the biggest parts of human beings' life in this contemporary world. Individually used screens do not depict themselves with their spatial characteristics, or material features compared to public screens. On the other hand, screens being located in public spaces especially outdoors have their own material characteristics which relates themselves with their spatiality such as roads, streets or sidewalks. These types of screens are more familiar with space to examine its presence by looking at their relation of material, physical presence, and spectator. Although outdoor displays stand out with their physical presence and materials, indoor and public displays are much more open to discussion with these features since they are usually conceptualized with their site-specificity. This thesis focuses on one of the indoor public spaces, especially exhibition spaces to discuss the relation between screen, art, and architecture.

In exhibition spaces, screens became one of the pioneer artwork materials, a medium in contemporary art especially for installations. There are thousands of examples which depict its material and medium with screen in contemporary artworks. For example, Nam June Paik, one of the pioneers of the artists working with the screen, made the screen one of the main parts of the art object, both physically and contextually. Especially as a modern artist, Paik implemented mass-media screens such as TV screens into exhibition environments with various installations. With TV Garden -one of Paik's seminal artworks produced in 1974- the artist explores a new

aesthetic discourse and the capacity that the screen offers as artwork (Figure 1). By creating a site-specific video installation, Paik sets a new standard for immersive and site-specific video installations which presents a very materialistic and spatial experience to the visitors. Mondloch explains the implementation and introduction of screen into exhibition space as: “In what I call screen-reliant installations, artists were newly concerned with the viewer–screen interface itself: the multifarious physical and conceptual points at which the observing subject meets the media object” (Mondloch, 2010, p: 2). With the new concern, various artists produced screen materialized artworks, installations by the enlightenment from other leading artists as important as Nam June Paik and him.



Figure 1. ‘TV Garden’ installation (1974) by Nam June Paik (Image by Solomon R. Guggenheim Museum Online Archive)

Before millennium and in the 1900's, interactive installations were increasing in galleries and, exhibition spaces. As a part of installation, screen has a great value in artwork production thanks to development of computer technologies. Jeffrey Shaw, who might be accepted as the one of the pioneers of interactive artworks, produced

many different installations based on screens and interactivity. One of them is *The Legible City*, which was installed first 1989 in Japan, is an interactive installation that places itself with its material by mimicking the real-life cycling experience in front of a screen (Figure 2 and 3). The audience, spectator, now accepted as participants explores the word-based city with a bicycle as the main interaction tool. The Legible City's screen covers the whole city as a part of the content which transforms itself into a virtual window. As a part of installation, the experience of cycling by looking at a screen depicts the screen of the installation as part of the space itself without any interaction. In other words, the screen becomes part of the artwork's world which integrates itself with the exhibition space.

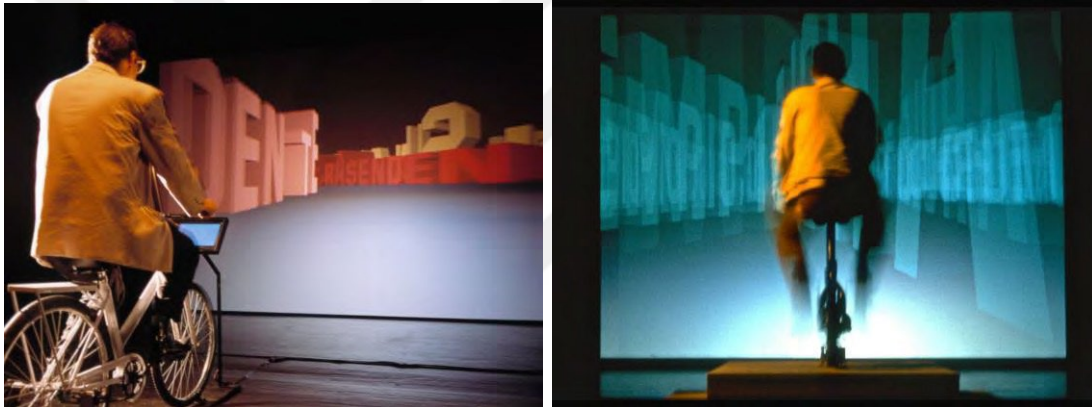


Figure 2 and 3. The Legible City (1989) by Jeffrey Shaw (Image by Jeffrey Shaw Compendium)

Bill Viola's *The Veiling*, which is a video and sound installation that was produced for the 46th Venice Biennale in 1995, is another example of presenting a different exhibit environment experience for visitors. Consisting of a system of nine sheer scrims that catch the light from two video projections, *The Veiling* presents a total environment that envelop the viewer in image and sound by employing state-of-the-art technologies (Figure 4).

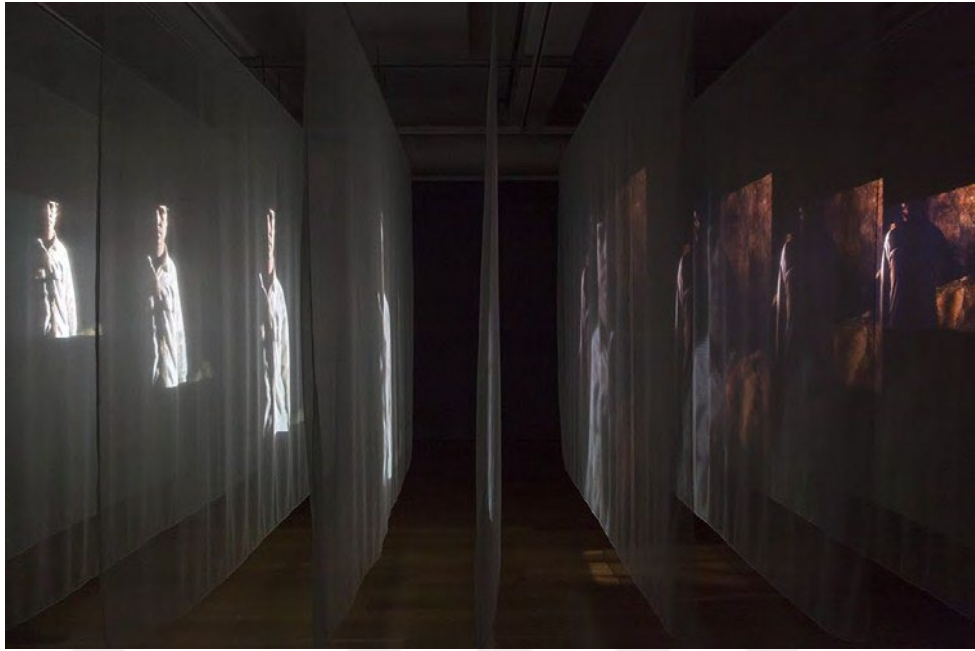


Figure 4. ‘The Veiling’ video and sound installation (1995) by Bill Viola (Image by Fabric Workshop and Museum Online Archive)

At the beginning of 2000’s, Krzysztof Wodiczko first presented his artwork *If You See Something* as the first large scale, indoor and projection-based installation (Figure 5 and 6). By debating the concept of alien and individual liberty, Wodiczko used projection as the main technique of his installation. The artwork consists of 4 different projections which meet with translucent screens considering the screen as a part of the architecture and its content. More than being a projected video on a surface, *If You See Something* allows its spectator to engage the physical presence of the screen as a window. Although, on the examples of Nam June Paik and Jeffrey Shaw, screen has taken its part in exhibition space by holding the features of being a material entity and having an intersection between the medium and space, Wodiczko’s artwork highlights itself with its peculiar physical presence. Bruno mentioned this highlight as:

the actual analytic material of projection, and because this surface is made physically present, it shows a peculiar quality. In these installations, screens can materially act as membranes. As the figures move in a blur, their contours come in and out of focus, becoming more consistent as they approach the limit of the screen. The effect makes the screen feel like a tissue, a permeable, thin sheet. (Bruno, 2020, p: 49)

Bruno's sentences are explaining one of the examples of the introduction of the screen as a part of architecture with its material entity into an exhibition space. The new term was established as "screen can materially act as membranes." (Bruno, 2020, p: 49) to exemplify the material presence of it. The interaction between the participant and the material screen was debated by looking at physical distance. This approach and usage show that the materialistic presence of the projection is accepted by the visitor and shapes the perspective through the screen more than being a light source. Furthermore, the projection has become a single entity with the projected surface and forms a new material and presence by transforming itself into an artificial tissue.



Figure 5 and 6. 'If You See Something...' installation (2005) by Krzysztof Wodiczko (Images by MACBA Collection)

Another example is the Light Time Tales exhibition by Joan Jonas installed at Pirelli Hangar Bicocca in 2014. While presenting various screen installations in this huge hangar space, the layout was one of the most important aspects of this exhibition. According to the interviews with the artist, even though the placement of the screen installations varies in the overall space, they have organized sightlines among the works with a consideration of visual alignments and visitors' movement through the space. In other words, screen installations guided visitors both in and out in indeterminate directions with their double-sided imagery (Williams, 2021). This shows not only the artist's interdisciplinary background but also her interdisciplinary approach to art (Figure 7). Similar approach also can be seen in an exhibition by Jin and Park in 2016 that practices different scaled, and type of screen installations

presented together as a composition (Figure 8). Also, it can be stated that these screens generate sub-spaces within the overall space by creating divisions for their visitors. By presenting different shaped screens, the artists' aim was to create a curiosity for the visitors to explore deeply.

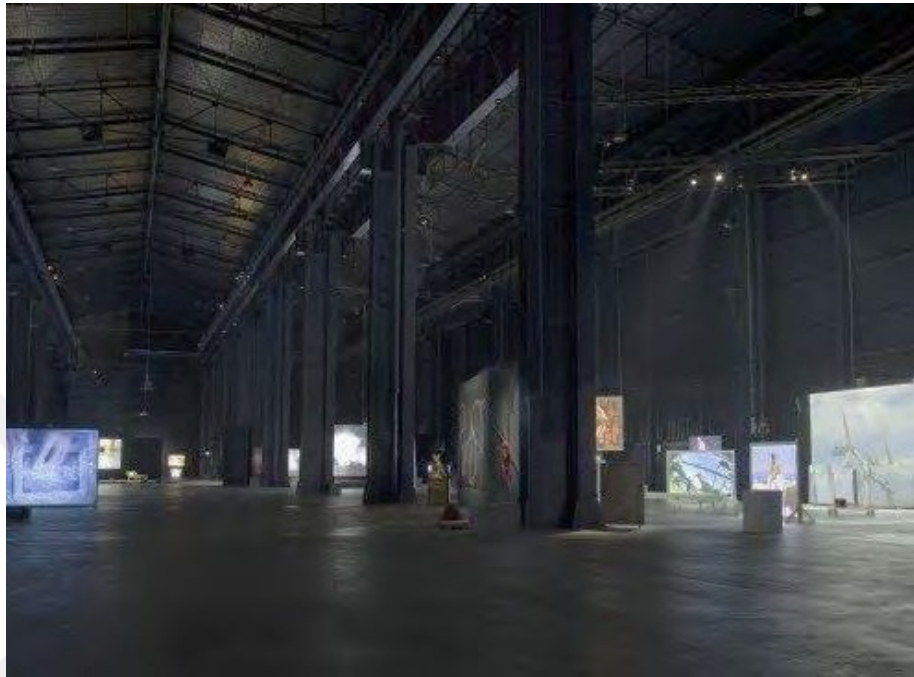


Figure 7. Light Time Tales installation view (2014) by Joan Jonas (Image by Pirelli Hangar Bicocca)



Figure 8. 'Moving Present' installation (2016) by Jin & Park (Image by Park Kisu)

2.3. Screen Materials on Space Formation

...the screen as an object that divides and thereby defines physical space (screen as a 'covered framework, partition, or curtain' that protects, shelters, conceals); and the screen as a means for transmitting and displaying images ('a screen upon which images may be cast by a magic lantern'), which, in turn, represents space in certain, conventionalized ways. (Sæther & Bull, 2020, p: 14)

By considering the spatial features of Wodiczko's *If You See Something*, the space and the screen are integrated into each other. In other words, the artwork defines the space with its content and its material. To examine in detail, *If You See Something* first divides the space with its frames and creates a defined partition in the exhibition space transmitting and displaying its content through the perspective of Sæther and Bull. Then the medium and the displayed content become a part of the space which might be accepted as a bodily integration. The whole work turns into a limb of a space by defining the space with its physical presence. To summarize, the definition derived from Sæther and Bull by examining Wodiczko's work introduces an enframing on the space formation of the screen.

Even if it is a projection, LCD or LED, screens become a part of interior architecture, a piece located on a surface. Especially in exhibition spaces, digital media and its technologies implement and integrate themselves to the exhibition architecture more than standing objects (Parry & Sawyer, 2005, p: 48). This implementation process leads to re-consider the concept of indoor exhibition areas and deployment of the screen in these spaces. Furthermore, physical locations and deployment of screens makes it impossible to explain without considering the spatial relationship and space formation of the screen both conceptually and contextually. Since an interior or indoor space can be accepted as an area which is covered with walls, screen contributes this space with its own spatiality. Almost for all exhibition spaces, the spectators get used to meeting with rooms, huge walls, high ceiling areas, passages and corridors, artworks are exhibited in these areas placed on the walls or through the walls except installations. Screens usually take their place on these walls which

belong to exhibition architecture or added later and spaces with its presence to display their content. Especially projections are placed onto these surfaces since they need more material to reflect and project their content than other types of screens since the other types of screens host their physical presence and display surfaces within themselves. In line with this, previous studies emphasize the screen as an intervention of the media to the architecture (Ebsen, 2013; Warner, 2018).

The surfaces on which projections are projected generally consist of walls, white curtains or areas used for projection purposes. These surfaces or areas participate in architecture both by their own spatiality and by shaping the space. Sæther and Bull define these two types of spatial formation and relation of the screen as a “duality” (Sæther & Bull, 2020, p: 15). Furthermore, the spatial duality about the screen highlights the physical presence by considering the screen's own spatiality and the feature of defining the space in which it is placed to show motion pictures “holding their own spatial representations” (Sæther & Bull, 2020, p: 15). This duality of the screen definition does not move the screen away from being an architectural element, but expands the screen definition, adding a new layer to the space and becoming a part of the space. In other words, the screen not only creates a new dimension by creating a new layer on the four walls inside the space, but also becomes a part of the space. This duality and hybrid condition reinforces the architectural definition of the screen and its surface. Similar to this statement by Sæther and Bull, Blau also specifies this condition of hybridity as a representation which is open to experience and personal interpretation by its viewer (2010).

The screen concept that emerged with the birth of cinema has crucial importance for discussing the spatiality and space formation of the screen. The viewing and screening experiences of cinema are completely related to the features of the screen. Watching a motion picture on a silver screen is a cult of a screening experience that takes its origins from cinema. The main difference between cinema viewing experience and the other types of screens can be examined through the space formation of the screen. In a movie theatre, cinema viewers usually tend to neglect the space and material while experiencing the movie itself (Mondloch, 2010).

Furthermore, it is expected from the cinema viewers that they have to forget where they are sitting, and the experience of cinema viewing creates an unconsciousness of time and space. The content and effect of the movie only meet with the expectation of the audience through this unconsciousness process. However, the unconsciousness of the audience is completely different in artwork screen watching, viewing experience. Media works are forcing its audience, viewers to be aware of the spatial formation of the screen (Mondloch, 2010). These types of works want the audience to be aware of the spatial and temporal relationship created by the screen instead of unconsciousness, and even to see it come to the fore. In other words, the whole process of artwork viewing matches with the spatial existence and material of the screen in the exhibition space. Furthermore, Giuliana Bruno mentions this duality and the reinvention of screen by referring to the transformation of cinema screen in a gallery space as a materialization and architectural elements: "...the shadow theatre that is cinema is reconfigured and rematerialized architecturally, and the white cube of the gallery turns luminously dark, we are returned to the absorbent, envisioning, relational fabric of projection, displayed on yet another form of screen-membrane." (Bruno, 2020, p: 51)

Last but not least, space formation of the screen can be examined through the perspective of the viewer. As a physically presented object screen has its own viewing experiences. Before the birth of cinema, this viewing experience was associated with painting in order to understand the viewer's relationship with the screen. The viewing experience of a painting is shaped by the viewer's encounter with the picture. In other words, the viewer is expected to be directly in front of centering the picture. Cinema which takes its essence from other art fields especially from painting, offers its audience a similar viewing experience. In relation to this viewing experience, Elcott states that the screen forms a three-dimensionality and draws viewers' attention by constituting "an atmospheric, sculptural body" (2012, p: 45).

The screen in the exhibition space differs itself from the past viewing experience

through its space formation and material. Mondloch mentioned transformation of the screen with the relation between viewing and space formation of the screen as: “The screen shifts from being the apex of the viewer’s “cone” of vision (centering the viewer as in perspectival painting) to being a conceptual and literal point of emphasis that the viewer moves around (something closer to minimalist sculpture)” (Mondloch, 2010, p: 64). Mondloch’s statement is explaining the transformation of the viewing experience through the act of the viewer as moving around an object which allows the viewer to connect the bond between the material condition and physical presence. Even mentioning a metaphor as minimalist sculpture, Mondloch highlights the form and material of the screen in a space. Regarding this space formation of the screen, Balsom again takes us to the history of cinema and states that screen that operates on a massive scale in the cinema domain. Therefore, this massiveness obtains an ability to "meld seamlessly with the architecture that serves as its support, dissolving interior volumes" and eventually it claims a space for itself within an exhibition space (2013, p: 43).

In terms of the exhibition space that the screen presented, there are previous studies defining the proper contemporary architectural space for the screen that posit a connectedness between the space, the exhibit object and the viewer. To start with a general approach, Pallasmaa defines the architectural space as an extension of nature since it is created by human and therefore, states that the space creates a ground for viewers to experience and understand what they encountered (2012). On the other hand, there are also some studies defining the coexistence of the architectural space and screen. In research by O'Doherty, it was stated that the screen's presence is the one that creates the architectural space (1986). Additionally, the screen benefits from this occurrence by having an identity within the space. Very similar to this statement, Di Carlo defines this by stating that the screen “is no longer contained in space, but is constitutive of, and constituted by, space” (2010, p: 157). From all these definitions, it can be stated that the architectural space becomes an environment that is not static and have “a changeable context”, in line with Barranha’s studies (2012, p: 178). Lastly, as underlined by Allen and Lupo the combination of this dynamic architectural space and screen proposes different kind of relations between the viewer, the screen and the space as it will be examined in the next chapter (2012).

CHAPTER III

SCREEN AND VISITOR BEHAVIOR

3.1. Screen and the Viewer

Screen is a dominant presence and interface in culture. We carry it with us, dedicate our attention to it and navigate our attention with it. Appearing in different forms, the screen pervades our contemporary lives. Even before the invention of still or moving photographic media, different practices such as camera obscura images, shadow shows, magic lantern projections, panoramas, dioramas positioned their viewers in front of various kinds of screens (Mondloch, 2010). These practices can be accepted as primal approaches to the screen-viewer relationship.

When looking into the screen-viewer relationship, it is important to understand the screen's earlier forms. In doing so, the viewing experience of cinema is encountered from the historical perspective. Since moving picture viewing activity is directly linked and appeared or exist with cinema, the first viewing experience in exhibition spaces takes its origin from it. Huhtamo pointed out the importance of looking at cinema in the following statement: “The notion of apparatus comes from cinema studies: it comprises not only the technical system but also the elements of the viewing situation, including the relationship between the screen and viewer, which is both physical and imaginary” (Huhtamo, 2004, p: 33). The properties of screen-

viewing experience in cinema and exhibition space differ and Mondloch (2010) summarized these differences accordingly. The comparison can be made as depicted in Table 1.

Table 1. Properties of screen-viewing experience in cinema and exhibition space

Screen-viewing experience	
(1) in cinema, viewers...	(2) in the exhibition space, viewers...
are tied to the moving images	are tied more to the space
disregard the actual space	are mindful about the actual material space
disregard the actual time for the duration of the film	are mindful about the actual time
encounter with the moving image	encounter with the moving image and screen object itself

During the mid-1960s, installations of mass media screens were integrated in the art production and this shift also influenced the screen-viewer relationship (Bishop, 2019). Reiss (2000) stated that there is always a reciprocal relationship between the screen, space, and viewer. This relationship differs according to different screen scenarios in exhibitions. The viewer can be offered specific activities, can be demanded to walk through the space and confront the screen, or the screen can be placed directly on the viewer's path (Reiss, 2000). In each of these scenarios, the viewer somehow completes the screen work because its "meaning evolves from the interaction between the two" (Reiss, 2000, p: xiii). Similarly, Marks also underlines the fact that although we are facing different screens every day, our response to the screen installation in an exhibition space diverges into new embodied experiences and differs from the other screens we are facing (2016).

According to Bishop (2019), installations of screens became more evocative by staging temporal and spatialized encounters between bodies and screens and therefore, a new form of screen-viewer relationship has emerged during this process. Bishop (2019) also introduced this viewer-screen relationship with emphasis on sensory immediacy, physical participation, and a heightened awareness of viewers. This heightened awareness of viewers was defined as "becoming part of the piece"

by activating viewers (Bishop, 2019). Moreover, as explained at the beginning of this section, it has been observed that our screen-oriented cultural habits also play an important role in this complex screen relationship in the exhibition space (Mondloch, 2010).

There are many screen practices that contribute to the physical aspects of the screen and its relationship to its surroundings. In other words, it offers the visitor its content as well as the environmental aspects, mentioned by Verhoeff (2019) as “not only display spectacular optical sights but also produce emergent environmental situations”, which is in line with its contribution to the architecture presented in the previous chapters (p: 120). Therefore, when a screen is placed within an exhibition space, its material condition and space formation also produce a territory where viewing activities can occur (Verhoeff, 2019). At the same time, approaching the screen from a space formation and territory of viewing perspective can help to better understand contemporary screen installations that have their own unique features and territories (Verhoeff, 2019).

On the other hand, when the screen’s “moving and illuminated imagery” is also included, the dynamics of screen-viewer relationship get even more complex (Mondloch, 2010, p: 62). According to Mondloch, certain screen installations generate "a forceful and critical effect" by presenting a duality between "illusionist/virtual and material/actual spaces" (Mondloch, 2010, p: 62). As Mondloch (2010) stated in this model, viewers were proposed to be embodied in the actual and material space of the exhibition and at the same time, were proposed as observers who are looking onto screen's spaces. In this regard, a statement by Reiss summarizes this visitor-screen relationship as “the spectator is in some way regarded as integral to the completion of the work” (2000, p: xiii).

3.2. Visitor Behavior: Attention and Interaction

According to Bitgood (2010), visitor attention is “a group of psychological and physiological processes” which requires a continuum and includes different parameters (p: 2). Correspondingly, the indicators of attention were explained as “approaching an object, stopping, viewing time, reading, talking with others about, thinking about, tests of learning and memory, rating scales” (Bitgood, 2010, p: 2). Attention to exhibit objects was found to be selective which is determined by the object’s distinctiveness and by whether the visitor’s pathway is close to the object (Bitgood, 2002; Serrell, 2002). Also, a visitor can focus their attention to only one exhibit object at a time and that visitor can only focus their attention if motivated (Bitgood, 2002). All the parameters may influence visitor directly and indirectly towards their actions, experiences, and feelings in exhibition spaces.

In exhibition spaces, it can be suggested that the visitor attention can be influenced by the exhibit object, exhibition space, and visitor characteristics (Bitgood & Patterson, 1987). For each of these categories, there are different factors suggested by the previous studies in this area. In terms of the exhibit object, there are variables found to be effective. To start with, Bitgood indicated that size, shape, color, motion, texture, dimension, and material are the characteristics that may have an impact on visitor attention (1992). Similarly, Falk and Dierking also specified placement, direction, size, shape, and dimension characteristics affecting the visitor attention (1992; 2011). Accordingly, previous research suggested that larger objects are able to hold attention better than smaller objects (Bitgood, 2014; Bitgood & Patterson, 1987; Bitgood, Patterson & Benefield, 1988). In terms of three- dimensionality, Peart (1984) suggested that three-dimensional objects tend to attract the attention more than the two-dimensional objects.

Another important influence is interaction which was stated that exhibit object in which the visitors are allowed to touch and/or manipulate may generate more

elongated attention (Bitgood, 1992; Koran et al., 1984). In terms of the shape, previous study by Bitgood (2010) suggested that exhibits with familiar shapes attract more attention compared to unfamiliar ones. Also, placement of exhibit objects influences behavioral patterns and distribution of attention between the objects (Lauer & Pentak, 2008; Sternberg & Sternberg, 2012). In a study by Miles et al., it was stated that the placement of the exhibit objects may create different effects on visitors and if one object is placed differently than others it may create a primary object effect to attract more attention (1982). Additionally, adding multi-sensory characteristics such as sound, smell or touch to the exhibit object attracts more attention as new senses are being stimulated (Bitgood, 2002; Peart, 1984).

As mentioned above, another important factor determining visitor attention is exhibition space characteristics. Prior studies suggested that placing the exhibit objects sequentially and creating a sequential layout in the space may help to hold visitors' attention since they would be able to explore exhibit objects one by one (Bitgood, 2002; 2010; Devine-Wright & Breakwell, 1996). Furthermore, exhibit objects that are close to the visitors' path in the exhibition space attract more attention compared to ones that are distant from the path (Bitgood, 2002; 2010). Exhibit objects that are visible from the entry point for visitors may increase the attention due to communication efficiency with the exhibit object in the exhibition space as proposed by Bitgood and Patterson (1987). Another study reported that there was a strong tendency for visitors to enter a gallery, move along the right-hand wall and exit by the first open door. Thus, when the door was closed so that visitors had to exit by the same door as they entered, visitors circulated more completely through the gallery giving attention to more objects on exhibit (Melton, 1935). The number and locations of access points to exhibition spaces can affect visitor attention (Bourdeau & Chebat, 2001). Similarly, it was suggested that exhibition spaces that have multiple points for accessing tend to decrease circulation efficiency. (Bitgood, 2006; Melton, 1935). Regarding the size of the exhibition space, Falk and Dierking reported that the time spent in smaller exhibition spaces is higher compared to bigger spaces due to distraction differences (1992; 2001).

Lastly, visitor characteristics is another determinant which focuses on both patterns of specific visitor categories (e.g., demographic characteristics, preferences) and general principles of visitor attention. As stated previously, demographic characteristics influence the level of curiosity as a motivation for exploring exhibits (Bitgood & Patterson, 1987; 2002; İmamoğlu & Yılmazsoy, 2009; Pekarik & Schreiber, 2012). It was suggested by Bitgood, Patterson and Benefield (1988), Hein (1998), and Falk (2009) that gender items affect the preferences and perceptions of people. Similarly in a study by İmamoğlu and Yılmazsoy, it was found that there are exhibit preference differences between women and men (2009). In addition to that, it was reported that women and children tend to sustain their attention for longer compared to men (Koran et al., 1984). In terms of education level, prior studies reported that the visitors with higher education levels (e.g., bachelor, master's, doctorate) tend to be more regular visitors of exhibition spaces (Macdonald, 2011). According to the previous studies on age factors of the visitors, it was found that different age ranges have different expectations and different visiting attitudes (Pekarik & Schreiber, 2012).

Visitor interaction focuses on visitors' actions while they are encountering a particular exhibit object and the way they are discovering them. It was stated that this interaction process can be defined as a type of communication between the exhibit object and visitor that forms the way people see, feel, perceive, and think about the exhibit objects (Hooper-Greenhill, 2000). According to Bitgood, an exhibit object that is sustaining the attention by offering interaction becomes more successful than the others (1992). Similar to that, another study in visitor interaction suggests that different exhibit objects expose different kinds of interaction (Blud 1990; McManus 1987). Therefore, it can be said that the visitor interaction is highly affiliated with the visitor attention.

According to Bitgood, interaction involves extensive perceptual, mental, and effective involvement with the exhibit object, and interacting with a certain object requires time, relative attention and concentration (2010). When these are achieved, the outcome may be personal interpretation and emotional response (Bitgood, 2010).

As stated by Hooper-Greenhill, emotional feedback received from the visitors cannot be detached from visitor behavior (2000). Sometimes, certain exhibit objects or one of their characteristics may have particular importance for some visitors due to their previous knowledge and experience, which results in sustained attention and interaction for longer compared to other exhibit objects. In the previous literature, this occurrence is defined as the ‘familiarity’ theory and it was stated that prior knowledge and experience of a certain exhibit or its material may determine the visitor’s behavior and experience (Hein, 1998; Hooper-Greenhill, 2000).

In a study by vom Lehn et al., it was found that various actions such as reading, inspecting, glancing and other similar actions display a potential interest and interaction (2005). In addition to discovering the exhibit object itself, prior studies also indicate that exploration of the exhibit object’s surrounding and overall atmosphere signifies visitor interaction (Hein, 1998). In this case, when the number of actions exploring a particular object increases, visitor interaction increases. Another item for interaction is the exhibit labels and prior studies suggest that shorter labels in terms of the information which have contrast between the text and the background are more likely to be read (Bitgood, 1992; Bitgood & Patterson, 1993).

While considering all these influencing factors, it may be useful to add a prior study by Screven, which points out that although visitors are free to interact with the exhibit objects, they are also equally free to ignore according to their will (1986). Therefore, as mentioned in the visitor attention section of this thesis, visitor interaction may be increased by making certain arrangements in the exhibition space and exhibit objects that can influence the visitor attraction, interest and thereby, interaction. To summarize what has been mentioned in the previous part, when visitors encounter with an exhibit object that is larger, three-dimensional, familiar shaped, and having multi-sensory features and allowed to be touched and/or manipulated, their attention and rate of interaction are likely to increase. In addition to that, Bitgood and Shettel reported that the color of the exhibit object is also important for visitors’ interaction and when color becomes more vivid, their interaction increases connectedly (1994). The following methodology chapter

presents the exhibition study along with the research questions and corresponded hypotheses of this study.



CHAPTER IV

METHODOLOGY

This chapter covers the methodology of this study based on the previous literature review. First, the framework of the study is presented briefly. Then, based on the aim of the study, the research questions and hypotheses are identified. Also, information about participants, instruments, setting and equipment, and procedure of the study are presented. Parallel to the setting and equipment part, screen scenarios are introduced specifically.

As stated in the previous literature, although the connection between the media and exhibition studies are current and progressing every day, there is a history of media installations that took place at the very beginning of film studies (Bruno, 2014; 2020). Therefore, their relationship was rooted in the birth of the medium. In this regard, screen installation practices that reformulated the architectural space of the exhibition and moving image have been produced in the media field since together. Therefore, they offer numerous potentialities for exhibition design, visitor experience and installation design. With this research topic, inter-disciplinary studies combining architecture and media may be enriched because there are spatial components of screen studies where architecture may be involved. Consequently, new material experiences of screen and unique visitor experiences could be explored.

As mentioned in Chapter I, this study investigates the impact of the materials of screen on the space formation through observing different screen materials in exhibition spaces. This study also makes an analysis of the relationship between the materials of the screen and visitor, by addressing visitor behavior that is divided as attention and interaction. With the aim of doing so, an exhibition experiment is

designed to understand (1) the impact of the materials of screen on space formation and (2) the relationship between the materials of screen and visitor behavior.

4.1. Framework of the Study

The purpose of the proposed framework of the study is to have a more comprehensive overview in exploring the materials of screen on space formation and its impact on visitor behavior, which is divided as attention and interaction. Therefore, it presents key points of the study, which are distributed in two different main blocks and covered in the previous literature (see Figure 9).

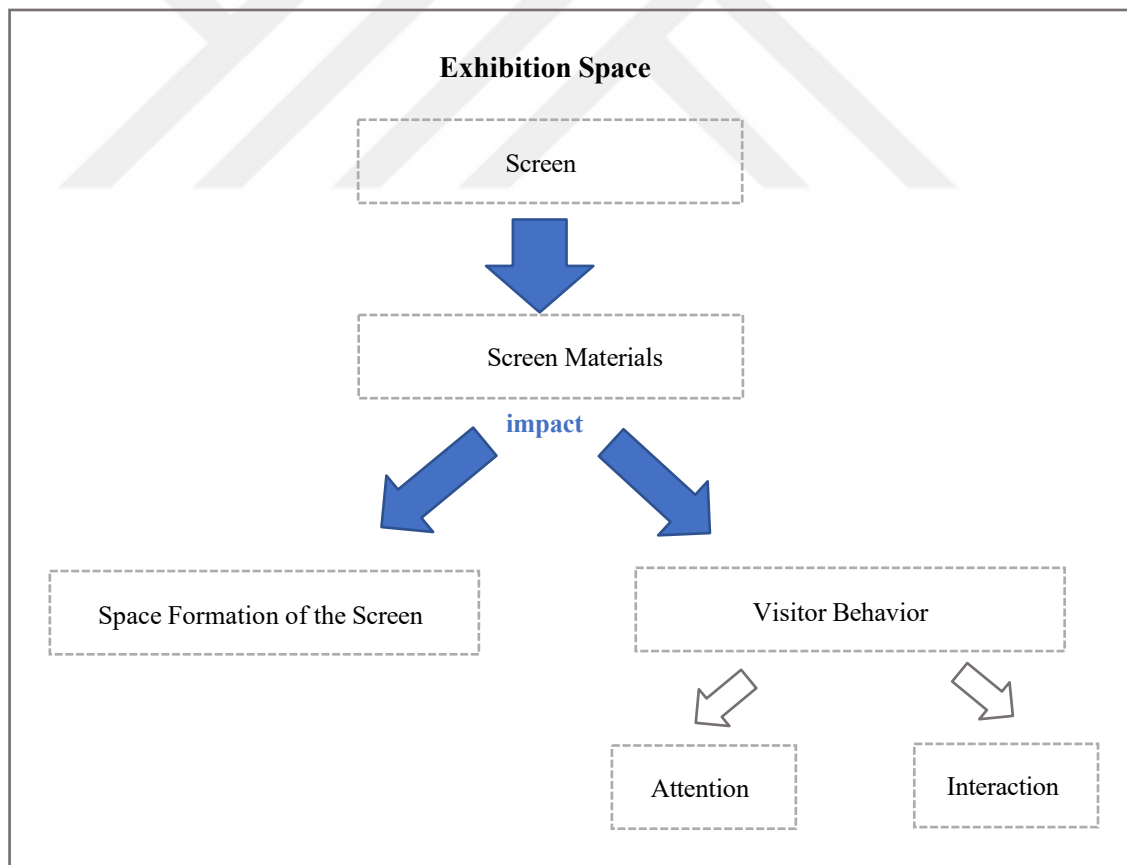


Figure 9. Conceptual Framework of the Study

Presented key points are analyzed through an exhibition experiment where four different screen conditions are designed in the exhibition setting and presented to the participant group. In the exhibition space, these screen conditions are designed to have the following characteristics: visual by being a site of projection, material by being tangible and haptic, and spatial by being an architectural surface configured as partition -primarily- in exhibition spaces. Since all these characteristics have an impact on visitor behavior, further analysis on visitor attention and interaction are studied.

4.2. Research Questions and Hypotheses

The objective of the study is to explore the impact of the materials on the space formation and on factors related to visitor behavior in exhibition spaces, thereby expand the screen's practices in exhibition spaces and examine screen- visitor relationship thoroughly where screen is not considered only as a visual condition, but also reveals material and spatial conditions. Also, these experimental screening practices present different relations across media, design, architecture, and visitor. In this respect, the following research questions are formulated, and the correspondent hypotheses are tested:

Q1: Do demographic characteristics have an impact on screen preferences of visitors?

Q2: Do screen materials have an impact on space formation in the exhibition space or perceived just as media screens from visitors' perspective?

Q3: Is there a relationship between screen materials and visitor behavior in the exhibition space?

Q3a: Is there a relationship between screen materials and visitor attention in the exhibition space?

Q3b: Is there a relationship between screen materials and visitor interaction in the exhibition space?

H1: There is a significant correlation between the demographic characteristics and screen preferences of visitors.

H2: Screen materials have an impact on the architectural layout from visitors' perspective.

H3: Screen materials have a significant impact on the visitor behavior in exhibition spaces.

H3a: Screen materials have a significant impact on the amount of attention paid by the visitor in the exhibition space.

H3b: Screen materials have a significant impact on the number of visitor interactions with exhibition space.

4.3. Participants

To conduct the study, non-probability purposive sampling method is used, which is a sub-type of non-probability sampling that relies on the researcher's own judgement of choosing the participants with a specific purpose and besides that, it is mostly used in exploratory research in the field (Etikan & Bala, 2017). A total of 32 people were selected based on their professional field, education level, age, and gender. They were selected from design-related professional fields such as art, media, design, and architecture. The reason for choosing from these specific professions was that, in this study, participants from the fields of art, media, design and architecture were expected to have perception differences than the participants from other fields. According to the previous studies, the distinction between perceptions of design related professions and non-design related professions shows that design related professions tend to react in perceptual terms where non-design related professions tend to react in associational terms (Rapoport, 1982).

Arnold's Values and Lifestyles Segments (VALS) model have been used in this study to achieve more effective results defining all participants' demographic characteristics. VALS model consists of different types of segments of the population to be used as target audiences and in this study, experiencers type has been selected as parameters of participants' demographics (Dean, 1994, p: 21).

“Experiencers” type comprises of young people who seeks direct and person-centred experience with an age of 25 years (Dean, 1994, p: 21). Therefore, all participants were expected to finish their undergraduate studies in related fields and were expected to be young art, media, design, and architecture professionals in this respect. In order to ensure balanced results and gender equality, the number of man and woman visitors were equally selected as the last variable to be tested in this study and thus, 16 women and 16 men participated in the study.

All participants joined the experiment one by one according to their assigned time slots, and there was no guidance on how to act or move in the exhibition space. The selected participants were informed about the content of the study and the recording procedure of their visit by the researcher because of the ethical concerns and were not compensated for their participation in this study. The consent form, involving the information about the experiment’s aim, procedure, and confidentiality for each participant, is provided before the study is conducted (see Appendix A). This protocol was approved by the Ethics Committee of İ.D. Bilkent University (NO: 2021_10_11_01) (see Appendix H).

4.4. Instruments

In this study, the instruments used in the assessment of the participants’ experience were the demographic questionnaire, unobtrusive observation, semi-structured interview, and survey questionnaire. Firstly, participants were introduced to the exhibition space where they were expected to experience the exhibition space. After their experience, they were expected to fill out the demographic questionnaire that includes demographic factors such as age, gender, profession, and one question regarding their frequency of exhibition visits. The demographic questionnaire is presented in Appendix B.

To explore the visitor behavior in the exhibition space, an unobtrusive observation

was made during each participant's visit by the researcher. Each participant was expected to act differently in the exhibition space for different lengths of time. Accordingly, some observation parameters were developed to gather data about each participant's behavior in the exhibition space while visiting the exhibits (Appendix C). Observation parameters were developed as 'Yes/No' options to record the participants' experience with four exhibits. These parameters were identified as following: stopping, taking photos, touching the exhibit, bending body, leaning, looking repeatedly, looking around the exhibit, looking above or below, other activities and lastly the number of times the participants performed these actions.

Unobtrusive measures are also used to gather the timing data as it was used in the previous visitor attention studies (e.g., Bitgood & Patterson, 1987; Peart, 1984). Timing data included overall visiting times of the exhibition study and participants' visiting times of each screen. Timing data was gathered from the time recordings which started with the participants' experience in the exhibition space.

After each participant's visit to the exhibition space, semi-structured interview was conducted to assess the impacts of the screen materials on the spatiality of the exhibition space from the perspective of participants (Appendix D). It included four questions related with: a) their preference of a specific screen, b) the type of interactions with screens, c) the understanding of screens as architectural beings or as simple partitions, and d) the impacts of the screens to the architectural layout.

Lastly, participants were expected to fill out a survey questionnaire as feedback of their experience with the screen materials. Likert-scale with five-points, beginning with 1 refers to very low and 5 to very high, was used in order to obtain the visitors' feedback on the materials of the screens. Questions regarding screens' material conditions, participants' interactions and interests were asked to the participants. At the end of the questionnaire, each participant was asked to answer the follow-up question related to their feelings during their exhibition visit. The survey questionnaire is presented in Appendix E.

4.5. Setting and Equipment

The exhibition experiment was conducted at İ.D. Bilkent University FADA Exhibition Hall (Figure 10). The exhibition hall is located in the Dean's Building of the Faculty of Art, Design and Architecture. The building is surrounded by faculty department buildings and therefore, it is in the middle of a heavy circulation path during the academic year. The exhibition hall is mostly used by the students of the Faculty of Art, Design and Architecture to present their undergraduate and graduate projects, end of the year exhibitions and other faculty related activities.



Figure 10. Photo of the exhibition layout and space

The FADA Exhibition Hall has one door from the outside of the building which is used for both entrance and exit. When entering the FADA Exhibition Hall, there is a lobby area that directs people to different spaces. From the lobby area, when taken a few steps towards the right side and climbed up the stairs, there is an area that is used for this study on the dates between 18 – 22 October 2021. The area has a rectangular plan indented from the side of the Dean's office and is 101.5 m² and the height of the overall space is 350 cm.

In the exhibition setting, four different screen scenarios were placed in the area and about the placement, especially Bitgood's previous studies guided this exhibition experiment in terms of technical requirements of the exhibition design. Since these four screens had four different materials, their material order in the space was another parameter. According to previous research, the exhibit object order in the space may create emphasis differences that affect visitors' attention (Bitgood, 1992). Therefore, to eliminate this effect, the material order was changed for each participant (Appendix F).

According to Bitgood (2010) since sequential processing investigates exhibit components one by one to achieve a more goal-driven experiment, this orderly pattern was also used for the placement of screen scenarios. Therefore, they were placed one by one, angularly and together they formed a zigzag shape in order to achieve a more complete viewing of exhibit components (Figure 11). Also, the introductory wall text was placed on the opposite wall when participants entered the exhibition area.

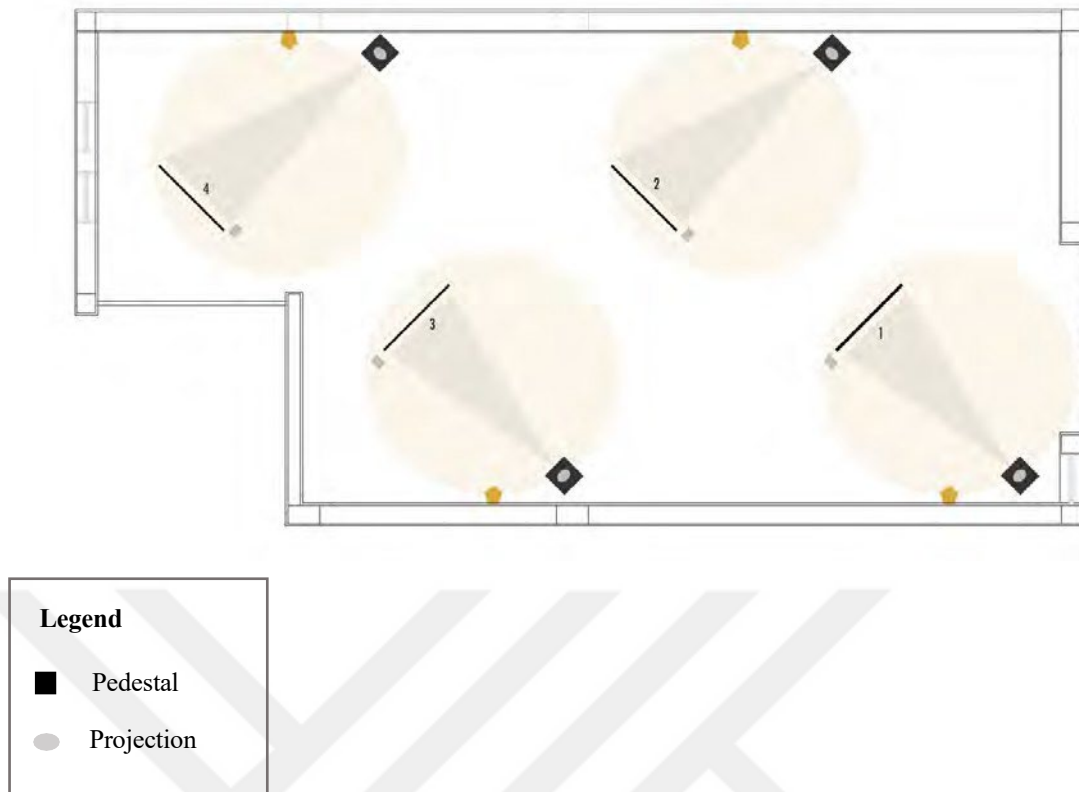


Figure 11. Exhibition experiment plan view

Each screen scenario consisted of its surface material, one projected video with one projection and its exhibit information label. Between all the screens, the same amount of space was left for the participants to attract the maximum amount of attention and also, to experience freely and to look behind the screen surfaces. All screens had the same dimensions to minimize the attention differences as suggested by the previous studies, and also all screens had the same shapes which were rectangular to attract more attention compared to unfamiliar shaped exhibit components (Bitgood, 2010). The video-projected sides of the screens were turned to the direction where the participants entered the area, thus emphasizing that the only difference between the screens was their surfaces. Exhibition labels were placed at the average eye-level as it was suggested by the previous literature (Bitgood, 1992). Those efforts were made to minimize the remaining element differences to have valid results. All screens can be seen in Figure 12, Figure 13, Figure 14, and Figure 15 (More photos from the exhibition experiment is presented in Appendix G).



Figure 12. Tulle screen



Figure 13. Metal screen



Figure 14. Mainstream screen



Figure 15. Concrete screen

For the projected videos Hitachi, Sanyo, Epson and Panasonic projections were used and placed on the black pedestals which was present in the exhibition space at a height of 100 cm. Video for each screen was projected in aspect ratio of 16:9 (1280x720 px) in HD format. The video was captured with a Sony A6300 mirrorless

DSLR camera by the researcher for increased image quality, resolution and color. As mentioned earlier, the same video has been played through one outlet from four screens. So, all the videos played through the outlet have all started at the same timing.

Ambient sound was also applied for the exhibition experiment for the reason that stimulates a new sense beyond sight, not conveying any information but adding a layer of meaning. For the ambient sound, Philips Bluetooth speaker was used and placed on the entrance window niche to ensure that the sound spreads evenly throughout the space. Finally, since the exhibition area already has a gallery-type spot lighting, an additional lighting scheme was not designed for this experiment.

4.6. Screen Scenarios

The screen reveals different conditions, often described through the metaphor of "window" in architecture. While the window is explained as an opening, aperture, separation of spaces ("of here and there, inside and outside, in front of and behind"), and a defined frame with a membrane of transparent surface, it transforms the outside space into a two-dimensional surface (Friedberg, 2006, p: 1). Screen, in this sense, is a virtual window by adding a new opening of space and changing the material condition of its built space. Therefore, in this exhibition study, the window metaphor is used as projected video content. The projected video content was a very important component to decide in terms of its dominance level. Since this study was an exploration of the material influences of the screen, the content of the screen was considered to remain in the background. On the other hand, if the content remained in the background too much, the level of attraction to the screen scenarios would be decreased correspondingly.

Having the metaphor of a window, the video consisted of basically a window view of one space. The view of the window was shot together with its window frames from the inside of the chosen space in Ankara, Turkey. The window view was shot by the researcher, during the day, for 29 minutes, in the ratio of 16:9. Besides being a metaphor, this window view was also a reference and reflection of our lives during the pandemic that affected everything and everyone including our habits. In this pandemic period, when we had to stay inside, we had to disconnect with the external world completely and the outside turned into an element that we looked through the window frame but could not touch or feel. Therefore, the exterior, which was actually a three-dimensional space, was reduced to a two-dimensional view within this pandemic period and eventually, it could not go beyond an image. Different shots from the window video can be found in Figure 16, 17 and 18 (More photos from the exhibition experiment can be seen in Appendix G).



Figure 16. One still image from the window video (Images by Evrim Karacan)

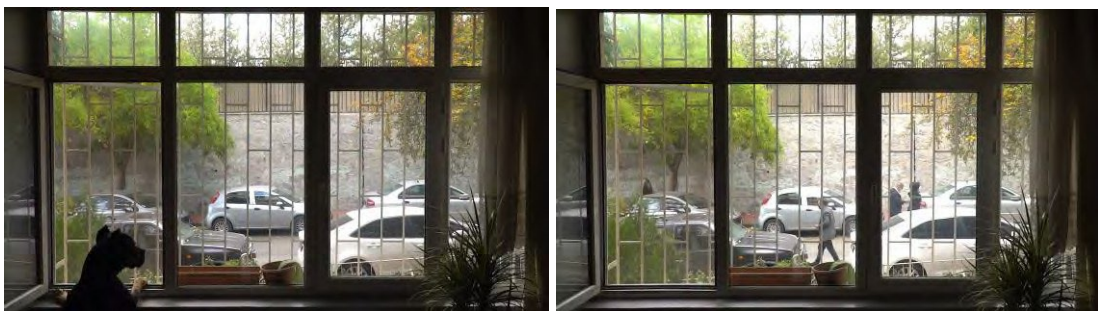


Figure 17 & 18. Still images from the window video (Images by Evrim Karacan)

The most important component of screen scenarios was screen materials, which was the main element to be experienced by the participants. Since the screen was deliberated in the architectural concept, screen materials were also chosen from the raw materials that are used in the architectural field. Tulle screen was formed from a tulle fabric, which is a white-colored, lightweight, sheer and netlike fabric with the dimensions of 100x180 cm and was hung to its standing structure, the same as the blackout cloth. Metal screen was formed from a corrugated metal sheet, which is a metallic-colored, linear-patterned, lightweight, shiny and opaque sheet of metal with the dimensions of 100x180 cm and placed on the ground of the space. Only the Mainstream screen was formed from a white blackout cloth that is used for regular projector screens to make a comparison with the other screens, which is a white-colored, heavy and opaque fabric. The dimension of the blackout cloth was 100x180 cm and was hung to its standing structure. Lastly, the Concrete screen was formed from autoclaved aerated concrete (AAC) blocks, which are in white color and have specifications of heavy, smooth, matte, and opaque blocks. AAC blocks have different dimensions but for this study, 12 AAC blocks with the dimensions of 60x25x10 cm were chosen to make a wall of 100x180 cm. Characteristics of all screens can be found in Table 2.

Table 2. Characteristics of screen scenarios

	Surface Material	Dimension	Color	Specifications
Tulle screen	Tulle	100x180 cm	White	Lightweight, mesh, netlike
Metal screen	Corrugated metal sheet	100x180 cm	White	Linear-patterned, opaque
Mainstream screen	Blackout cloth	100x180 cm	White	Heavy, opaque
Concrete screen	AAC blocks	100x180 cm	White	Heavy, matte

Except the Mainstream screen since it will be used to make comparisons with other screen materials, each screen scenario was a representation of basic architectural materials. Tulle screen was a representation of *textile* in architecture, which is used

for tensile structures, inflatable spaces, and many other applications. Metal screen was a representation of *steel*, which is used for reinforcement of buildings but also acts as a skin. Finally, Concrete screen stood for *concrete*, which is a widely used material for building construction. In addition to that, each material had a base with wheels for the ease of moving in accordance with screens' order since screens' order will be changed for each participant in this study.

4.7. Procedure

To answer the research questions and test the hypotheses of this study, the following exhibition experiment procedure is conducted with the related instruments as seen in Figure 19:

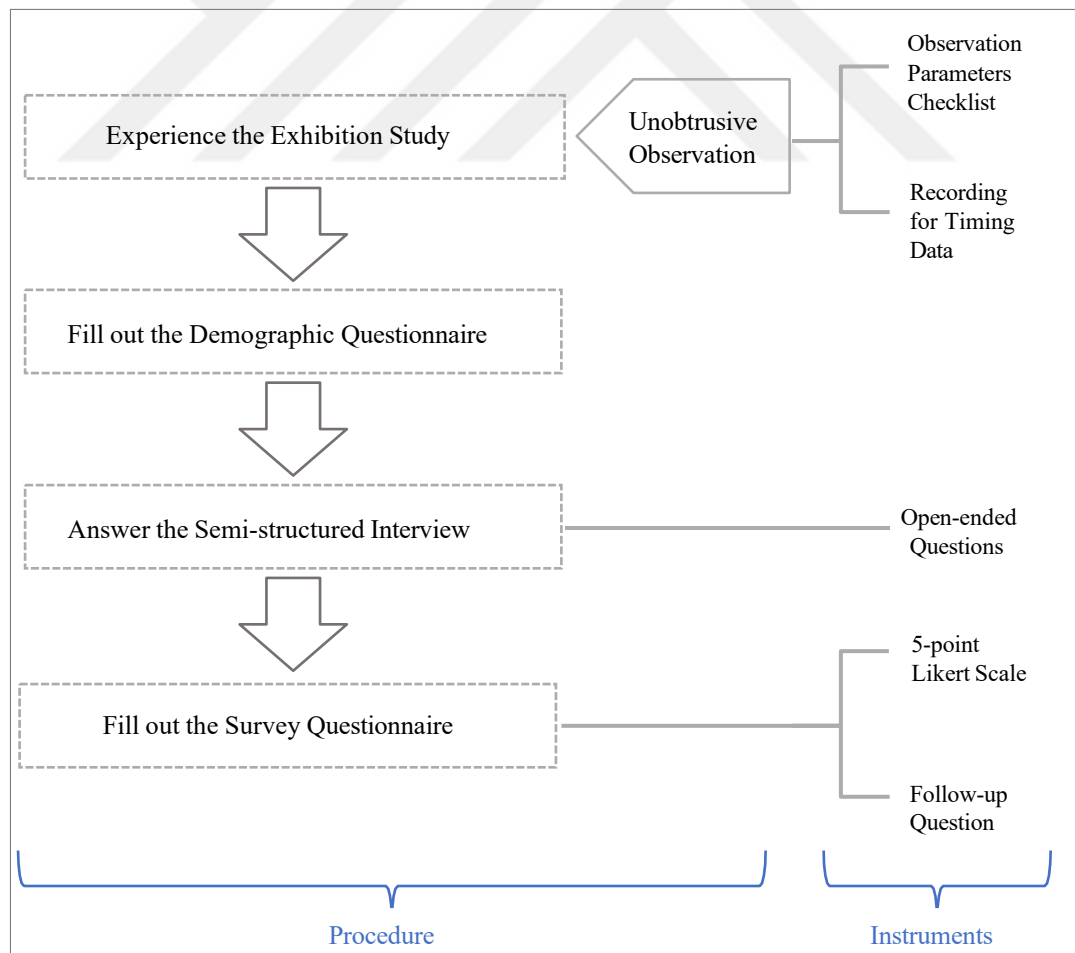


Figure 19. Procedure of the Study with the Related Instruments

Prior to the exhibition study, participants were informed briefly about the exhibition concept and the time recording of their visit, and their consent was obtained. Then, participants entered the area from the entrance, walked straight through the corridor and reached the exhibition area. When they arrived, they first encountered with the introductory wall, which included some general information about the exhibition and the content of the exhibits.

As the first phase of the experiment, participants were introduced to the exhibition space where they had a chance to move around freely. Also, participants were allowed to touch any exhibits to make them explore with their will. All participants entered the space one by one within the defined timeslots to avoid high density in compliance with the pandemic conditions. During each visit, unobtrusive observation was made by the researcher and also, time recording was made in order to have the data of visitor attention, screen experience and interaction. After participants completed their exhibition visits, they filled out the demographic questionnaire covering information about their age, gender, profession with an additional question regarding their frequency of exhibition visit. Then, they were asked semi-structured interview questions and then, they filled out the survey questionnaire consisting of Likert-scale questions as feedback of their experience with different screen materials. One last fill-in-the-blanks question section was also developed to gather participants' feelings and emotions about the overall exhibition and screens. The following results chapter elaborates on the statistical findings of this study.

CHAPTER V

RESULTS

This chapter demonstrates the research findings related to the impact of the screen materials on space formation through observing different screen materials in exhibition space. Also, it presents an analysis of the relationship between the screen materials and visitor behavior that is divided as attention and interaction. Statistical Package for Social Sciences (SPSS) software version 21 (IBM Corp, 2012) was used to process and analyze the collected data. First, descriptive analysis was done to observe the demographic characteristics of participants. Then, the analysis for exploring the screens materials were performed in terms of screen preferences of the participants and analysis of the screen materials on space formation. To investigate the relationship between the screens and participants, visitor attention and interaction were analyzed by looking at the timing data, observation parameters, emotions, and feelings of the participants. Lastly, reliability analysis tests were conducted in order to test for the items of the questionnaires' consistency.

5.1. Descriptive Analysis

The demographic questionnaire distributed to the participants consisting of the information about participants' age, gender, profession and one additional question regarding their frequency of exhibition visits (see Appendix B). The experiment was

conducted with 32 participants who were selected according to the VALS model. Among the participants, 16 were women and 16 were men with a mean age of 25.97 years (SD=3.94). The age range of the participants was between 20 to 34 years. Accordingly, 5 of the participants were at the bachelor level, 14 of them were at the master level and 13 of them were at the doctorate level. Regarding participants' professions, 4 of the participants were from the field of art, 11 of them were from the field of media, 15 of them were from the field of architecture and finally, 2 of them were from the field of design. Table 3 demonstrates the demographic profile of the participants.

Table 3. Demographic information of the participants (n= 32) of the study

Characteristics	Category	Frequency	Percentage
Gender	Woman	16	50.0
	Man	16	50.0
Age	Less than 25	16	50.0
	25 - 30	10	31.3
	More than 30	6	18.8
Education Level	Bachelor's	5	15.6
	Master's	14	43.8
	Doctorate	13	40.6
Profession	Art	4	12.5
	Media	11	34.4
	Architecture	15	46.9
	Design	2	6.3
Visiting Frequency	1 time	6	18.8
	2-5 times	3	9.4
	6-9 times	15	46.9
	10-12 times	6	18.8
	Every month	2	6.3

Results related to exhibition visiting frequency in a year showed that the majority of the participants (15) were visiting exhibitions 6 to 9 times in a year. Six of the participants were visiting exhibitions 10 to 12 times, and 6 of them were visiting exhibitions for once a year. Since screens' orders or in other words, materials' orders

were changed for each participant, the information regarding its distribution that is combined with the demographic characteristics are given in Appendix F.

5.2. Analysis of Screen Materials

This part covers results on factors related to screens' material characteristics and how screens were perceived by the participants in this research. First, an analysis regarding participants' screen preferences was made according to their demographic characteristics. Then, screens' materials on space formation analysis were made by looking into (1) the screen perceptions of participants whether screens were architectural elements or media screens and its correlation to demographic characteristics, (2) whether screens have an impact on the architectural layout, and lastly, (3) participants' experiences of screen materials. Accordingly, the screen perceptions of participants also were compared with their screen preferences and the answers given to the open-ended interview questions were analyzed in that respect (see Appendix D).

5.2.1. Analysis of Screen Preferences

Regarding the analysis of the screen materials in this study, firstly participants' screen material preferences were analyzed and 'tulle screen' ranked as the most preferred screen material with 14 of the total participants. It was followed by the 'concrete screen' with 8, 'metal screen' with 6 and lastly, 'mainstream screen' with 4 participants as it is shown in the Table 4.

Table 4. Screen preferences of the participants

Characteristics	Frequency	Percentage
Tulle screen	14	43.8
Metal screen	6	18.8
Mainstream screen	4	12.5
Concrete screen	8	25.0
Total	32	100.0

Bivariate correlation analysis is used in order to understand the relationship between participants' demographic characteristics and their screen material preferences.

Spearman's rho correlation test was conducted in this study. The results of the test are shown in Table 5 by indicating only a significant correlation between the participants' screen preferences and their professions at $p=0.05$ level.

Table 5. Spearman's rho correlation between participants' screen preferences and demographic characteristics

Characteristics	Spearman's rho	Screen Preferences
Gender	Correlation Coefficient	-.115
	Sig. (2-tailed)	.532
Education Level	Correlation Coefficient	.280
	Sig. (2-tailed)	.121
Profession	Correlation Coefficient	.447*
	Sig. (2-tailed)	.010

* Correlation is significant at the 0.05 level (2-tailed)

The results of the correlation tests indicated a moderate relationship between screen preferences and profession ($\rho=0.447$; $p=0.010$). Also results showed that, gender and education level of the participants were not correlated with their screen preferences.

According to the Table 6, 3 of the participants from the art professions have preferred the tulle screen. Mainstream and concrete screens were the screens that are not preferred by the participants from the art professions. Then, 7 of the participants from the media professions have also preferred, mostly the tulle screen. This was followed by the mainstream screen with 4 participants which also shows that the other screens were not preferred by the participants from the media professions. When looking at the participants that are from the architecture professions, concrete screen has ranked in the first place with 7 of the participants. While the mainstream screen was not preferred by anyone from the architecture professions, the metal screen with 5 of the participants and the tulle screen with 3 of the participants followed the concrete screen respectively. Lastly, the half of the participants from design professions preferred the tulle screen, while the other half of them preferred the concrete screen.

Table 6. Screen preferences of the participants by profession

Professions	Screen preference	Frequency	Percentage
Art	Tulle screen	3	75.0
	Metal screen	1	25.0
	Mainstream screen	0	0.0
	Concrete screen	0	0.0
Total		4	100.0
Media	Tulle screen	7	63.6
	Metal screen	0	0.0
	Mainstream screen	4	36.4
	Concrete screen	0	0.0
Total		11	100.0
Architecture	Tulle screen	3	20.0
	Metal screen	5	33.3
	Mainstream screen	0	0.0
	Concrete screen	7	46.7
Total		15	100.0
Design	Tulle screen	1	50.0
	Metal screen	0	0.0
	Mainstream screen	0	0.0
	Concrete screen	1	50.0
Total		2	100.0

In terms of the gender characteristics, the results of the screen preferences of the participants showed that the majority of both female and male participants preferred the tulle screen. Six of female participants and half of male participants preferred the tulle screen. Five of female participants preferred the concrete screen and the metal screen has preferred by 4 participants. The least preferred screen with 1 by female participants has resulted as the mainstream screen. On the other hand, 3 of male participants preferred the mainstream screen while another 3 preferred the concrete screen. Thereby, the metal screen has ranked the last place with 2 of male participants. An independent samples t-test was run to explore whether female and male participants differ in their screen preferences and the result has indicated that there were no significant differences between these gender groups at $p=0.05$ level (see Table 8).

Table 7. Screen preferences of the participants by gender

Gender	Screen preference	Frequency	Percentage
Woman	Tulle screen	6	37.5
	Metal screen	4	25.0
	Mainstream screen	1	6.3
	Concrete screen	5	31.3
Total		16	100.0
Man	Tulle screen	8	50.0
	Metal screen	2	12.5
	Mainstream screen	3	18.8
	Concrete screen	3	18.8
Total		16	100.0

Table 8. Results of the independent samples t-test for the screen preferences by gender

Gender	Screen preference	t	df	Sig. (2-tailed)
Woman (n= 16) Man (n= 16)	Tulle screen	0.557	30	0.582
	Metal screen			
	Mainstream screen			
	Concrete screen			

Regarding the results of screen preference of the participants by education level (Table 9), majorities of the participants both with bachelor's and master's degrees preferred the tulle screen. Four of the participants with bachelor's degree preferred the tulle screen and it was followed by the mainstream screen with only 1 participant. It was also found that none of the participants with bachelor's degree preferred the metal and concrete screens. Six of the participants with master's degree preferred the tulle screen. Three of the participants with master's degree preferred the mainstream screen while another 3 preferred the concrete screen. Lastly, 2 of them preferred the metal screen. In the last education level, doctoral degree, results showed that 5 of the participants with doctoral degree preferred the concrete screen. While 4 of them preferred the tulle screen and, equally, 4 of them preferred the metal screen, none of the participants with doctoral degree preferred the mainstream screen. As found in the previous paragraphs, there was no significant relationship between the education level and screen preferences of the participants. Therefore, a chi-square test was run to find out the independency of these two parameters. As shown in Table 10, the results of the chi-square test showed that the education levels and screen preferences are not independent of each other ($\chi^2 = 9.100$; $df = 6$; $p = 0.168$).

Table 9. Screen preferences of the participants by education level

Education level	Screen preference	Frequency	Percentage
Bachelor level	Tulle screen	4	80.0
	Metal screen	0	0.0
	Mainstream screen	1	20.0
	Concrete screen	0	0.0
Total		5	100.0
Master level	Tulle screen	6	42.9
	Metal screen	2	14.3
	Mainstream screen	3	21.4
	Concrete screen	3	21.4
Total		14	100.0
Doctorate level	Tulle screen	4	30.8
	Metal screen	4	30.8
	Mainstream screen	0	0.0
	Concrete screen	5	38.5
Total		13	100.0

Table 10. Results of the chi-square test for the screen preferences by education level

Education level	Screen preference	χ^2	df	Sig. (2-tailed)
Bachelor's	Tulle screen	9.100	6	0.168
Master's	Metal screen			
Doctorate	Mainstream screen			
	Concrete screen			

5.2.2. Analysis of Screen Materials on Space Formation

Regarding the analysis of screen materials on space formation, the Interview Question-3 (IQ-3) was analyzed (see Appendix D). As can be seen in Table 11, it was found that 23 of the total participants stated that the screens, overall, were perceived as architectural elements in this study while 9 of them stated that screens were perceived as just media screens. In order to understand the relationship between the result of the IQ-3 and demographic characteristics of participants results were examined accordingly by profession, gender and education levels of participants.

Table 11. Results of the Interview Question-3

IQ-3: Do you think that the screens are the architectural elements/partitions of the space, or do you think that they are just media screens?	Frequency	Percentage
Architectural elements	23	71.9
Just media screens	9	28.1

From the participants' profession perspective, it was found out that all participants from design profession stated that screens were perceived as just media screens in this study (Table 12). In spite of this, the majorities in other professions have answered as screens being architectural elements in the exhibition space. Three of

the participants from art profession emphasized screens as architectural elements and accordingly, the remaining 1 participant as just media screens. While 10 of the participants from media profession stated that screens were architectural elements, only 1 of them stated that these were just media screens. In the architecture profession section, the results showed that 10 of the participants stated that screens were architectural elements and 5 were in the side of just media screens. In order to test whether the results of the IQ-3 were correlated to the professions of the participants, bivariate correlation analysis has been performed. The results of the Spearman's rho test showed that there is no significant correlation between the results of the IQ-3 and professions (see Table 13).

Table 12. Results of the IQ-3 by profession

Professions	Results of IQ-3	Frequency	Percentage
Art	Architectural elements	3	75.0
	Just media screens	1	25.0
Total		4	100.0
Media	Architectural elements	10	90.9
	Just media screens	1	9.1
Total		11	100.0
Architecture	Architectural elements	10	66.7
	Just media screens	5	33.3
Total		15	100.0
Design	Architectural elements	0	0.0
	Just media screens	2	100.0
Total		2	100.0

Table 13. Results of the Spearman's rho correlation test of the IQ-3 by profession

Profession	Results of IQ-3	Correlation Coefficient	Sig. (2-tailed)
Art (n= 4)			
Media (n= 11)	Architectural elements	0.342	0.055
Architecture (n= 15)	Just media screens		
Design (n= 2)			

In gender characteristics, the results showed that the majority of both genders stated that screens were architectural elements (Table 14). In women, this majority was found out as 10 of woman participants and in men as 13. An independent samples t-test was run to explore whether woman and man participants differ in their answers to the IQ-3 and the result has indicated that there were no significant differences between these gender groups (see Table 15).

Table 14. Results of the IQ-3 by gender

Gender	Results of IQ-3	Frequency	Percentage
Woman	Architectural elements	10	62.5
	Just media screens	6	37.5
Total		16	100.0
Man	Architectural elements	13	81.3
	Just media screens	3	18.8
Total		16	100.0

Table 15. Results of the independent samples t-test for the IQ-3 by gender

Gender	Results of IQ-3	t	df	Sig. (2-tailed)
Woman (n= 16)	Architectural elements	1.168	30	0.252
Man (n= 16)	Just media screens			

As in Table 16, the results showed that in all education levels, again, the majority stated that screens were architectural elements in this study. At bachelor level, this frequency was 3 and accordingly, the rest 2 of participants stated that screens were just media screens. At the master level, where the discrepancy between the choices was the highest, 12 of participants stated that screens were architectural elements while only 2 of them stated that screens were just media screens. At the last level, doctorate level, screens as architectural elements were selected by 8 of participants where the rest 5 of participants stated that screens were just media screens. In order to test whether the results of the IQ-3 were correlated with the education levels of the participants, bivariate correlation analysis is performed. The results of the Spearman's rho test showed that there is no significant correlation between the

results of the IQ-3 and education levels (see Table 17).

Table 16. Results of the Interview Question-3 by education level

Education level	Results of IQ-3	Frequency	Percentage
Bachelor level	Architectural elements	3	60.0
	Just media screens	2	40.0
Total		5	100.0
Master level	Architectural elements	12	85.7
	Just media screens	2	14.3
Total		14	100.0
Doctorate level	Architectural elements	8	61.5
	Just media screens	5	38.5
Total		13	100.0

Table 17. Results of the Spearman's rho correlation test for the IQ-3 by education level

Education level	Results of IQ-3	Correlation Coefficient	Sig. (2-tailed)
Bachelor's (n= 5)	Architectural elements	0.102	0.577
Master's (n= 14)	Just media screens		
Doctorate (n= 13)			

In order to have insights about the relationship between the results of the IQ-3 and participants' screen preferences, the following Table 18 was developed. The results showed that the majority of participants who stated that the screens are architectural elements have chosen the tulle screen with 10 participants. Metal screen preference has followed in the second place with 5 of the participants in the architectural elements section. Mainstream and concrete screens have followed the ranking with the same proportion as 4 of participants. Then, in the just media screens section, the results showed that the tulle and concrete screens have ranked in the first place together with the same frequencies as 4 participants. These were followed by the metal screen with only 1 of participants and none of these participants who stated that screens were perceived as just media screens preferred the mainstream screen. According to that, a chi-square test was run to find out the independency of these two

parameters. As shown in Table 19, the results of the chi-square test showed that the IQ-3 and screen preferences are not independent of each other ($\chi^2 = 3.850$; $df = 3$; $p = 0.278$).

Table 18. Results of the IQ-3 by screen preferences

Results of IQ-3	Screen preference	Frequency	Percentage
Architectural elements	Tulle screen	10	43.5
	Metal screen	5	21.7
	Mainstream screen	4	17.4
	Concrete screen	4	17.4
Total		23	100.0
Just media screens	Tulle screen	4	44.4
	Metal screen	1	11.1
	Mainstream screen	0	0.0
	Concrete screen	4	44.4
Total		9	100.0

Table 19. Results of the chi-square test for the IQ-3 by screen preference

Results of IQ-3	Screen preference	χ^2	df	Sig. (2-tailed)
Architectural elements Just media screens	Tulle screen	3.850	3	0.278
	Metal screen			
	Mainstream screen			
	Concrete screen			

Further analyses were made to have a comprehensive approach to understand participants' perceptions of the screen as an architectural element. Answers from the total of 23 participants gathered from the IQ-3 have been deliberated based on multiple repetitive responses and analyzed under these four keywords of being an architectural element as *volume*, *physical form*, *circulation*, and *layout* (Table 20). These keywords have been selected according to the participants' answers to the IQ-3 but also supported by the answers to the Interview Question-4 (IQ-4). Because, in the IQ-4, participants were asked to express their opinions on the architectural effects of the screens and screen materials and its impact on the architectural layout. Therefore, the answers were found to be similar and were analyzed together.

According to the results, 7 of the participants stating that screens were architectural elements, interpreted screens from point of physical form-related characteristics (e.g., “...screens work as frames which in its essence is an architectural element...”). Another 7 of the participants approached screens from their layout-related aspects (e.g., “...separates the space into four different...”). These were followed by the participants commenting on screens as volumes with 6 (e.g., “...creates its own environment and surrounding...”). Lastly, 3 of participants stated that screens were architectural elements of circulation (e.g., “...as they direct my movement in space...”). In the below Table 21, some participants’ opinions were presented under defined keywords.

Table 20. Analysis of the screens perceived as architectural elements

Result of the IQ-3	Keywords	Frequency	Percentage
Architectural elements	Volume	6	26.1
	Physical form	7	30.4
	Circulation	3	13.0
	Layout	7	30.4
	Missing	9	28.1
	Total	23	100.0

Table 21. Opinions on the screens according to defined keywords

Keywords	Opinions
Volume	P18: “...creates its own environment and surrounding...”
	P25: “...giving the impression of being at that environment ...”
	P28: “...transform into a three-dimensional space ...”
Physical form	P15: “...screens act as frames which in its essence is an architectural element...”
	P16: “... rectangular forms of space to be a medium for art...”
	P31: “...working as a door opening to another space...”
Circulation	P2: “... guided my circulation through the exhibition...”
	P10: “...as they direct my movement in space...”
	P12: “... lead my flow ...”
Layout	P9: “... separating the space into four different...”
	P21: “...becomes part of the architectural setting of the space...”
	P30: “...while creating sub-spaces in the exhibition...”

Additionally, correlations were calculated in order to test whether defined keywords were related to participants' demographic characteristics. According to that, it was found out that there is only a moderate significant correlation between defined keywords and educational levels of the participants who stated that screens are architectural elements in this study ($r = 0.654$; $p = 0.001$). There was no correlation between gender and defined keywords, and profession and defined keywords.

Table 22. Correlation analysis between defined keywords and demographic characteristics

Characteristics	Pearson	Keywords
Gender	Correlation Coefficient	-.240
	Sig. (2-tailed)	.270
Education Level	Correlation Coefficient	.654**
	Sig. (2-tailed)	.001
Profession	Correlation Coefficient	.143
	Sig. (2-tailed)	.516

** Correlation is significant at the 0.01 level (2-tailed).

When the expressions of the participants were examined in detail, it was seen that there were many differences between the opinions. Although there were differences between the opinions, the majority of the participants have agreed on each material presented different experience as P8 stated that “From the color of the materials to their texture, the experience was different even though the image was the same thing.” P22 also associated the textures of the materials with the viewing experiences by stating that this relationship was the most apparent on the tulle and concrete screens as “...the tulle screen creates the impression of a sunny day with the projector light giving the impression that sunlight is reflecting. Concrete screen, due to the aerated material, creates a grainy image, as if the video is a recording from a different time period when physical films were used.” Similarly, P17 summarized his/her opinion as “Different materials have different kinesthetic relations with the perceiver. Each material, due to its characteristics, demonstrates the image in a different manner which

‘reflects’ the dramaturgical structure of the artwork in various authentic senses.”

While P15 stated that the screens in the study have “a directing and orienting influence on the layout”, P18 expressed his/her opinions on the placement of screens as:

The placement of the screen, what is around the screen and the number of people that are in that mediated space are all aspects that affect one another. The architectural layout could be designed in accordance with the screen, or the screen could be placed according to the existing architectural layout. Either way, the material in relation to the space that it is presented in affects the level of experience.

On the other hand, P5 approached the screen-space relationship from screens' material characteristics by stating that “When the opacity of the material increases, the relationship between materials and the space increases.” Another participant who stated that the screens were architectural elements, P23, ranked the relationship of the screen with the space according to its materials and made the following comment:

Concrete felt more like a partition and divided the area. Since the image was seen from behind the tulle screen and also on the wall behind the tulle screen, that screen impacted and transformed the entire area. Metal screen was fun to look at since it has movement, but I do not think it impacted the space. I feel the same about the mainstream surface as well.

5.3. Analysis of Visitor Attention and Interaction

Table 23 shows the amount of total time spent and the amount of time spent in front of each screen. According to the timing results, participants spent an average of 12.27 minutes in the exhibition setting. The minimum time spent in the overall exhibition setting was found as 7.15 minutes and the maximum was found as 25.07 minutes.

Looking into the visiting time results of each screen, it was found that the minimum

time spent in front of the tulle screen was the highest time with 39 seconds ($M=1.36$, $SD=0.90$). This result was followed respectively by the concrete screen with 34 seconds ($M=1.33$, $SD=0.52$), the metal screen with 33 seconds ($M=1.05$, $SD=0.48$) and lastly, the mainstream screen with 24 seconds ($M=1.13$, $SD=0.43$). The maximum time spent in front of the tulle screen was again the highest time with 4 minutes 39 seconds. Concrete screen has followed the tulle screen with 2 minutes 60 seconds and the metal screen has ranked in the third place with 2 minutes 30 seconds. Lastly, participants spent least time in front of the mainstream screen with 2 minutes 14 seconds. Overall, the most time spent was in front of the tulle screen, and the least time spent was in front of the mainstream screen.

Table 23. Visiting time (in min.) results of the participants

Visiting time (in min.)	n	Minimum	Maximum	Mean	SD
Tulle screen	32	00.39	4.39	1.36	0.90
Metal screen	32	00.33	2.30	1.05	0.48
Mainstream screen	32	00.24	2.14	1.13	0.43
Concrete screen	32	00.34	2.60	1.33	0.52
Total	32	7.15	25.07	12.27	4.37

In order to identify participants' visiting time based on their demographic characteristics, following analysis were made as shown in Table 24, Table 25 and Table 26. Table 24, which shows the visiting time results of the participants based on their professions, indicates that the maximum time spent was in front of the tulle screen in each profession with different time durations. Participants from art profession spent maximum 1.59 minutes in front of the tulle screen ($M=1.26$; $SD=0.26$) while the least time has been spent in front of the concrete screen ($M=0.87$; $SD=0.49$). For the participants from media profession, the highest time spent was in front of the tulle screen with 3.21 minutes ($M=1.28$; $SD=0.98$). The maximum time spent, again, was in front of the tulle screen for the participants from the architecture profession, and it has resulted as 4.39 minutes ($M=1.48$; $SD=1.02$) and it was also found out that this duration was the highest among the professions. For the participants from design profession, the maximum time spent was 1.23 minutes and it was spent in front of the tulle screen ($M=1.16$; $SD=0.09$). The mainstream screen was the least time spent screen for the participants from media, architecture, and

design professions. These durations were 00.24 (M= 0.72; SD= 0.41), 00.32 (M= 0.82; SD= 0.51), and 00.44 (M= 0.50; SD= 0.08) respectively.

Table 24. Visiting time (in mins) results of the participants by profession

Profession		n	Minimum	Maximum	Mean	SD
Art	Tulle screen	4	1.03	1.59	1.26	0.26
	Metal screen	4	1.01	1.44	1.23	0.18
	Mainstream screen	4	00.48	00.55	0.50	0.03
	Concrete screen	4	00.37	1.44	0.87	0.49
Media	Tulle screen	11	00.48	3.21	1.28	0.98
	Metal screen	11	00.39	1.46	0.89	0.41
	Mainstream screen	11	00.24	1.42	0.72	0.41
	Concrete screen	11	00.34	2.60	0.86	0.65
Architecture	Tulle screen	15	00.39	4.39	1.48	1.02
	Metal screen	15	00.33	2.30	1.11	0.60
	Mainstream screen	15	00.32	2.14	0.82	0.51
	Concrete screen	15	00.38	2.08	0.98	0.49
Design	Tulle screen	2	1.09	1.23	1.16	0.09
	Metal screen	2	1.11	1.17	1.14	0.04
	Mainstream screen	2	00.44	00.56	0.50	0.08
	Concrete screen	2	1.12	1.18	1.15	0.04

Regarding the analysis on gender characteristics, the screens on which both man and woman participants spent their minimum and maximum time were found to be the same (see Table 25). The mainstream screen, where the minimum time was spent, woman participants spent 00.32 minutes (M= 0.65; SD= 0.32), while man participants spent 00.24 minutes (M= 0.80; SD= 0.52). Tulle screen, on the other hand, was found out to be the screen that woman and man participants spent their maximum time. This duration was 3.15 minutes for woman participants (M= 1.39; SD= 0.65) and 4.39 minutes for man participants (M= 1.34; SD= 1.11).

Table 25. Visiting time (in mins) results of the participants by gender

Gender	Visiting time (in mins)	n	Minimum	Maximum	Mean	SD
Woman	Tulle screen	16	00.39	3.15	1.39	0.65
	Metal screen	16	00.33	2.30	1.13	0.54
	Mainstream screen	16	00.32	1.33	0.65	0.32
	Concrete screen	16	00.38	1.58	0.79	0.38
Man	Tulle screen	16	00.42	4.39	1.34	1.11
	Metal screen	16	00.36	1.57	0.97	0.43
	Mainstream screen	16	00.24	2.14	0.80	0.52
	Concrete screen	16	00.34	3	1.08	0.61

While looking at the education levels of the participants, the results showed that there are differences between different education levels. At bachelor level, both the minimum and maximum time spent was in front of the mainstream screen, the minimum was 00.24 and the maximum was 1.29 minutes ($M= 0.60$; $SD= 0.40$). However, the average time spent was the highest in front of the tulle screen with 0.91 minutes ($SD= 0.36$). Secondly, participants at the master level spent their minimum time in front of the concrete screen with 00.34 minutes ($M= 0.88$; $SD= 0.60$) and their maximum time in front of the tulle screen with 3.21 minutes ($M= 1.24$; $SD= 0.87$). Lastly, at doctorate level, the minimum time spent was in front of the mainstream screen with 00.32 minutes ($M= 0.88$; $SD= 0.53$) while the maximum time spent was in front of the tulle screen with 4.39 minutes ($M= 1.67$; $SD= 1.01$).

Table 26. Visiting time (in mins) results of the participants by education level

Education level		n	Minimum	Maximum	Mean	SD
Bachelor's	Tulle screen	5	00.49	1.23	0.91	0.36
	Metal screen	5	00.39	1.11	0.72	0.32
	Mainstream screen	5	00.24	1.29	0.60	0.40
	Concrete screen	5	00.47	1.12	0.84	0.31
Master's	Tulle screen	14	00.42	3.21	1.24	0.87
	Metal screen	14	00.36	1.46	1.02	0.38
	Mainstream screen	14	00.37	1.42	0.63	0.31
	Concrete screen	14	00.34	2.60	0.88	0.60
Doctorate	Tulle screen	13	00.39	4.39	1.67	1.01
	Metal screen	13	00.33	2.30	1.22	0.58
	Mainstream screen	13	00.32	2.14	0.88	0.53
	Concrete screen	13	00.40	2.08	1.04	0.51

Chi-square test was performed in order to explore if there is any difference between screen preferences of the participants and visiting times of the four different screens. As a result of that, it was found that there is no significant difference between watching times of the four materials in terms of screen preferences as shown in Table 27 ($\chi^2 = 3.850$; $p = 0.278$; $df = 3$).

Table 27. Results of the chi-square test for visiting time of the participants by screen preference

Visiting time of the participants	Screen preference	χ^2	df	Sig. (2-tailed)
Visiting time of the Tulle screen	Tulle screen	3.850	3	0.278
Visiting time of the Metal screen	Metal screen			
Visiting time of the Mainstream screen	Mainstream screen			
Visiting time of the Concrete screen	Concrete screen			

Regarding the analysis of visitor interaction in this study, firstly, observation parameters (Appendix C) were analyzed one by one according to the screen materials. Then, the 6th, 7th, 8th, 9th, and 10th statements of the Likert-Scale survey questions were examined since those questions were consisting of participants' rating answers of their interaction levels at overall and screen by screen. Following

this analysis, the second interview question in the questionnaire was analyzed screen by screen as it was asked to gather participants' emotions and feelings about their viewing experience with the screen materials. Then, 1st, 2nd, 3rd, 4th, and 5th statements of the Likert-Scale survey questions were analyzed as a general analysis to explore the participants' interest levels, knowledge levels, diversity ratings, emotion ratings, and inspiration levels. Lastly, fill-in-the-blanks type of sentences which were focused on participants' emotions and feelings under certain concepts in positive and negative manners was analyzed as the last item in the questionnaire.

In the last section of the questionnaire, participants were asked to complete fill-in-the-blanks type of sentences that applies to them (see Appendix E). These sentences were focused on participants' emotions and feelings under certain concepts in positive and negative manners. Positive aspects were included as *surprised by, most interested in, inspired by, most enthusiastic about* and negative aspects were included as *disappointed by* and *bored by*.

For the observation parameters analysis, as can be seen in Table 28, all participants *have stopped* for the observation of each screen. It can be said that the results of the observation parameters are very close to each other for all screens. Six of participants took photos of the metal screen and it was followed by the tulle and concrete screens with 5 of the total participants. The mainstream screen was the least photographed screen albeit by a small margin (4 of the total participants). Regarding the results of the action of bending the body, all participants have bent their bodies when they were observing the tulle screen. This was followed by the metal screen with 30 of the total participants, then the mainstream screen (29 of the total participants), and lastly, the concrete screen (28 of the total participants). Twenty-one of the total participants have leaned forward when they were observing the concrete screen. This was closely followed by the tulle screen with 20 of the total participants and then, the metal and mainstream screens with the same number of participants (19 of the total participants). It was reported that 27 of total participants have touched the tulle screen, and another 27 to the concrete screen, while 26 of participants have touched the metal screen. The mainstream screen has been touched by the 25 of participants which is again with a very little difference compared to

other screens. Regarding the results of the action of looking repeatedly to the specific screen, 22 of the total participants have looked repeatedly to the tulle screen. It was followed by the concrete screen (21 of the total participants), metal screen (19 of the total participants), and mainstream screen (18 of the total participants) respectively. When looking at the action of looking around to the specific screen, it can be said that the majority of the participants (28 of the total participants) have looked around to the tulle screen. Twenty-two of participants have reported that looking around to the concrete screen and it was followed by the metal screen (21 of the total participants). Only 16 of the total participants have looked around the mainstream screen. The last action of the observation parameters, looking above/below was performed mostly for the tulle and metal screens with the 19 of the total participants. This was followed by the concrete screen with the 17 of the total participants and lastly, the mainstream screen (16 of the total participants). Overall, the majority of the actions placed in the observation parameters have been performed for the tulle screen. It can also be stated that the mainstream screen was the screen where the least action was taken while observing.

Table 28. Frequencies of the observation parameters for each screen

Observation Parameters	Screen Material							
	Tulle		Metal		Mainstream		Concrete	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Stopping	32	100.0	32	100.0	32	100.0	32	100.0
Taking photos	5	15.6	6	18.8	4	12.5	5	15.6
Bending body	32	100.0	30	93.8	29	90.6	28	87.5
Leaning	20	62.5	19	59.4	19	59.4	21	65.6
Touching the exhibit	27	84.4	26	81.3	25	78.1	27	84.4
Looking repeatedly	22	68.8	19	59.4	18	56.3	21	65.6
Looking around	28	87.5	21	65.6	16	50.0	22	68.8
Looking above/below	19	59.4	19	59.4	16	50.0	17	53.1

Secondly, the L6, L7, L8, L9 and L10 5-point Likert Scale survey questions were designed to further examine participants' overall interactions with different screen materials and specifically the four screen materials and Table 29 presents the

statistical analysis and Figure 20 presents the frequencies of these parameters (see Appendix E for the questionnaire). L6 question was about participants' overall interaction with all four screens and 43.8% of participants or in other words the majority reported that their overall interaction level was *high* and 34.4% of participants' level was *very high* respectively (M= 4.06, Md=4.00). Tulle screen was ranked as the most interacted one compared to other screens according to the results of the L7 Likert question. As 56.3% of participants reported that their interaction level was *very high* (M= 2.91, Md=3.00), although 12.5% of participants stated that their interaction level was *low*. Regarding the results of the L8 Likert question which was about participants' interaction level with the metal screen, 37.5% of participants answered that their level was *very high* and it was followed by 28.1% of participants stating that their level was *high* (M= 4.28, Md= 5.00). The following L9 Likert question was about the interaction level with the mainstream screen, and it was found to be the least interacted screen as the majority stated that their level was *low* with the 40.6% of participants (M= 3.88, Md= 4.00). But on the other hand, 18.8% of participants stated that their interaction level was *high*. And therefore, it can be said that this question has the most diverse answers compared to other screens. Lastly, L10 Likert question which was standing for participants' interaction level with the concrete screen has resulted as *high* with the 43.8% of participants (M=3.81, Md= 4.00). It was followed by the 28.1% participants as they stated that their interaction level was *very high*. Also, the reliability analysis was performed, and Cronbach's alpha value has resulted as 0.46. Since there are few questions in the questionnaire in terms of the number, the alpha value may have been affected and it may have resulted low (Tavakol & Dennick, 2011). With the further analysis on Cronbach's alpha value, it was seen that if L9 Likert question would be deleted from the scale, the value would be the highest with 0.59.

Table 29. Analysis of L6, L7, L8, L9, and L10 5-point Likert Scale Responses

	Percentage					Median	Mean	SD	Cronbach's Alpha
	Very Low	Low	Moderate	High	Very High				
L6	3.1	0.0	18.8	43.8	34.4	4.00	4.06	0.91	0.38
L7	0.0	12.5	3.1	28.1	56.3	3.00	2.91	1.17	
L8	3.1	9.4	21.9	28.1	37.5	5.00	4.28	1.02	
L9	6.3	40.6	21.9	18.8	12.5	4.00	3.88	1.12	
L10	3.1	12.5	12.5	43.8	28.1	4.00	3.81	1.09	

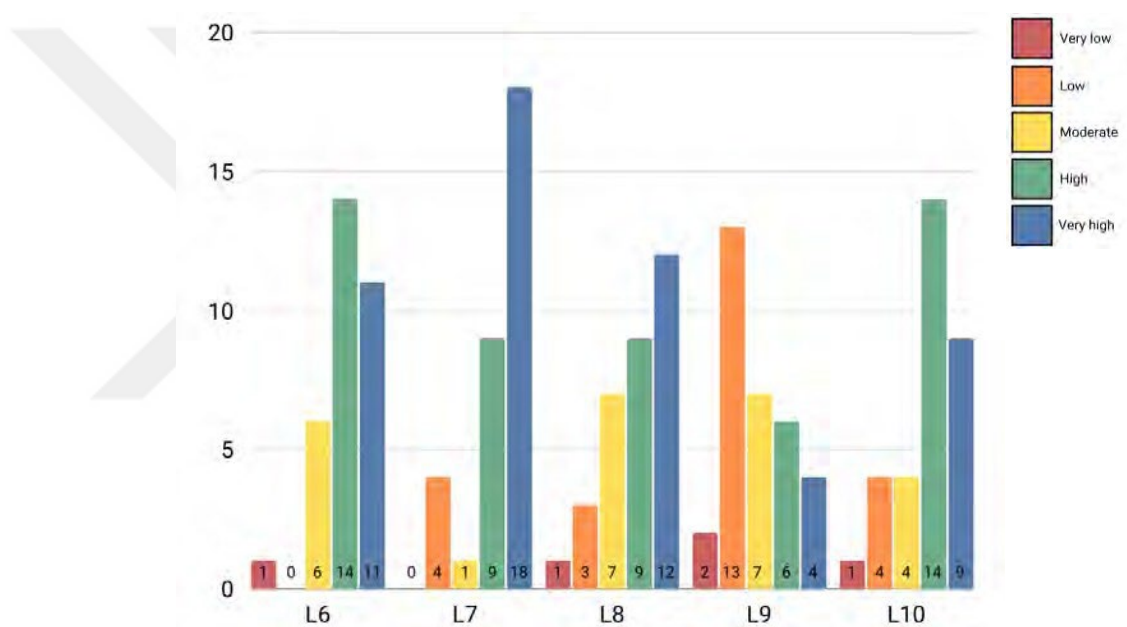


Figure 20. Frequencies of L6, L7, L8, L9, and L10 5-point Likert Scale Responses

Another analysis made to investigate visitor interaction was made by looking at the answers given by the participants to the Interview Question-2 (IQ-2). This question was asked to gather participants' emotions and feelings about their viewing experience with the screen materials. Some of the answers were summarized in Table 30. According to participants' opinions, it can be said that the answers were quite diverse in terms of their viewing experiences. Since the question was open-ended, it was found to be some of the participants commented on their overall experience, while some of them commented about specific screens. A total of 26

participants commented on their feelings from a general perspective with statements such as “focused and curious”, “enjoyable and different” and “inspiring and unexpected”. In terms of the feelings about the viewing experience of the tulle screen, comments of the participants included expressions such as “light and transparent feeling”, “a gateway to hazy, dream-like state” and “out-of-this-world feeling”. For the metal screen, some participants stated that it was an “interesting” feeling while some of them felt like it “elongated their vision”. Mainstream screen, on the other hand, led to comments such as “secure feeling” and “ordinary”. Finally, the concrete screen had remarks such as “painting-like effect”, and “nostalgic feeling”.

Table 30. Some of the participants’ feelings about viewing experiences of different screens

Screen Material	Opinions
General	P10: “Focused and curious” P15: “Eye-opening” P22: “Very unique” P23: “Enjoyable and different” P32: “Inspiring and unexpected”
Tulle	P1: “Light and transparent feeling” P4: “Adding more abstract sense, like a magical portal” P11: “A gateway to hazy, dream-like state” P27: “Out-of-this-world feeling”
Metal	P2: “Humorous feeling with distortions” P5: “Interesting” P17: “The most different and distorted image” P21: “Elongated my vision”
Mainstream	P7: “The most comforting and similar” P8: “Secure feeling” P16: “Ordinary” P31: “The realest”
Concrete	P13: “Feeling emersed” P24: “Painting-like effect” P28: “Different perspective to my imagination” P29: “Nostalgic feeling”

General analysis to explore the participants' interest levels, knowledge levels, diversity ratings, emotion ratings, and inspiration levels have been done with the L1, L2, L3, L4, and L5 5-point Likert-Scale survey questions respectively (see Appendix E for the questionnaire). These general questions were developed to support the visitor interaction analysis in this study and the related analysis are depicted in Table 31 and the frequencies are in Figure 21. L1 question was about the participants' interest rate of the screen design in exhibition spaces. As 43.8% of the total participants, which is the majority, stated that their interest was *high* (M=4.13, Md= 4.00). This was followed by *very high* with the 34.4% of the total participants and there were no answers indicating very low and low options. Secondly, L2 question was developed to find out participants' knowledge on the screen design in exhibition spaces and the majority of the answers were *low* with the 40.6% of the total participants (M= 3.00, Md= 3.00). This was followed by the 34.4% of the total participants stating their knowledge is *high*. The next question L3 was focusing on the ratings of the diversity of screen materials and the majority which is 46.9% of the total participants answered that the diversity was *very high* (M= 4.16, Md= 4.00). In terms of understanding participants' feeling and emotions, L4 question was asked to rate their feelings of engagement and 46.9% of the total participants stated as *very high* (M= 4.31, Md= 4.00). While none of the participants answered as very low and low, 37.5% of the total participants rated their feelings as *high*. Lastly, L5 question was asked to gather participants' ratings on their inspiration levels and the results showed that the 46.9% of the total participants indicated their level as *very high* and this was closely followed by the 40.6% of the total participants stating that their level was *high* (M= 4.34, Md= 4.00).

Table 31. L1, L2, L3, L4, L5 5-point Likert Scale Responses

	Percentage					Median	Mean	SD	Cronbach's Alpha
	Very Low	Low	Moderate	High	Very High				
L1	0.0	0.0	21.9	43.8	34.4	4.00	4.13	0.751	0.38
L2	0.0	40.6	21.9	34.4	3.1	3.00	3.00	0.950	
L3	3.1	6.3	9.4	34.4	46.9	4.00	4.16	1.051	
L4	0.0	0.0	15.6	37.5	46.9	4.00	4.31	0.738	
L5	0.0	0.0	12.5	40.6	46.9	4.00	4.34	0.701	

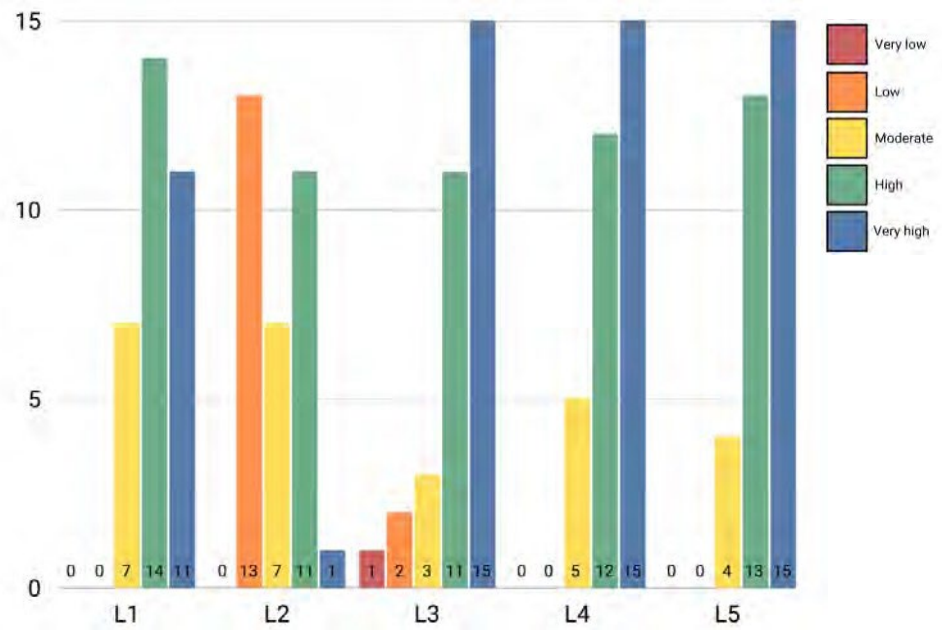


Figure 21. Frequencies of L1, L2, L3, L4, L5 5-point Likert Scale Responses

In the last section of the questionnaire, the participants were asked to complete fill-in-the-blanks type of sentences that applies to them (see Appendix E). These sentences were focused on participants' emotions and feelings under certain concepts in positive and negative manners. Positive aspects were included as *surprised by*, *most interested in*, *inspired by*, *most enthusiastic about* and negative aspects were included as *disappointed by* and *bored by*. Figure 22 summarizes the frequencies of positive statements answered by the participants in stacked graph form. As can be seen from Figure 22, the proportion of the tulle screen has resulted as the most preferred one in all positive concepts. Participants reported that they were most *surprised by* the tulle screen ($n = 11$; 34.4%). This was followed by the metal ($n = 4$; 12.5%) and concrete screens ($n = 4$; 12.5%) with the same proportions. Mainstream screen has given as answer only by 1 participant. Additionally, in this part, 10 of the total participants (31.3%) stated that they were most surprised by *the viewing experience that changes with each screen material*. In the second section, answering rate was higher compared to the first one and participants reported that they were *most interested in* the tulle screen ($n = 11$; 34.4%). This was again followed by the metal ($n = 7$; 21.9%) and concrete screens ($n = 7$; 21.9%) with the same proportions. Mainstream screen ranked in the last place with preferred by the 4 of the total

participants for this sentence. As continuing with the *inspired by* sentence, it was seen that the majority 9 of the total participants (28.1%) stated that they were inspired by the tulle screen. While the mainstream screen was not selected by any of the participants, metal and concrete screens have selected by the same proportions as 3 of the total participants (9.4%). In addition to specific screen selections, 8 of the total participants stated that they were inspired by the idea of this exhibition study (25%) and also, 5 of the total participants stated that they were inspired by the use of diverse materials in this study (15.6%). In the last part of the positive sentences, participants were asked to fill out what was they got *most enthusiastic about* and 7 of them stated that they were *most enthusiastic about* the tulle screen (21.9%). While the mainstream screen was not selected by any of the participants in this section, metal and concrete screens have selected by the same proportions as 3 of the total participants (9.4%). In addition to that, 12 of the total participants stated that they were most enthusiastic about the impact of materials (37.5%).

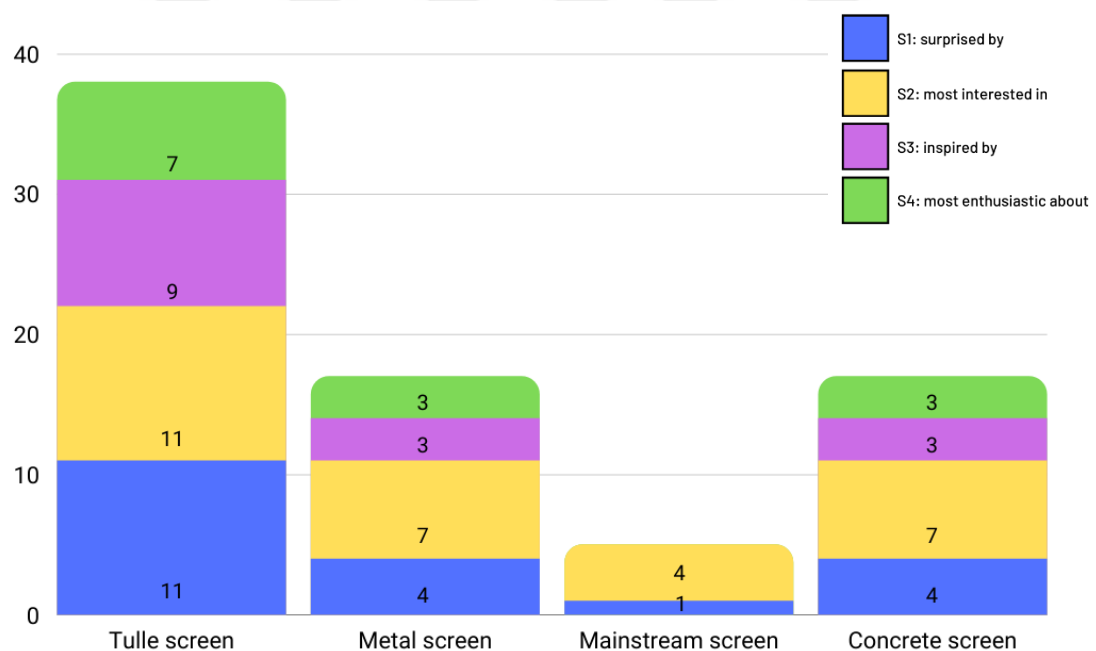


Figure 22. Stacked Graph for Frequencies of Positive Fill-in-the-blanks Responses

In terms of the negative statements in the fill-in-blanks section, it was found out that the answers of the majority of the participants were about the mainstream screen (see

Figure 23). Participants reported that they were mostly *disappointed by* the mainstream screen (n= 5; 15.6%) and this was followed by the concrete screen (n= 3; 9.4%). While the metal screen was not selected by any of the participants in this section, the tulle screen was selected by only 1 of the total participants (3.1%). 18 of the total participants specifically stated that they were disappointed by nothing (56.3%). Lastly, in terms of statements regarding *bored by*, 7 of the participants reported that they were bored by the mainstream screen. Again, while the metal screen was not selected by any of the participants, 1 participant selected the tulle screen, and another 1 participant selected the concrete screen. In this section, 18 of the total participants specifically stated that they were bored by nothing (56.3%).

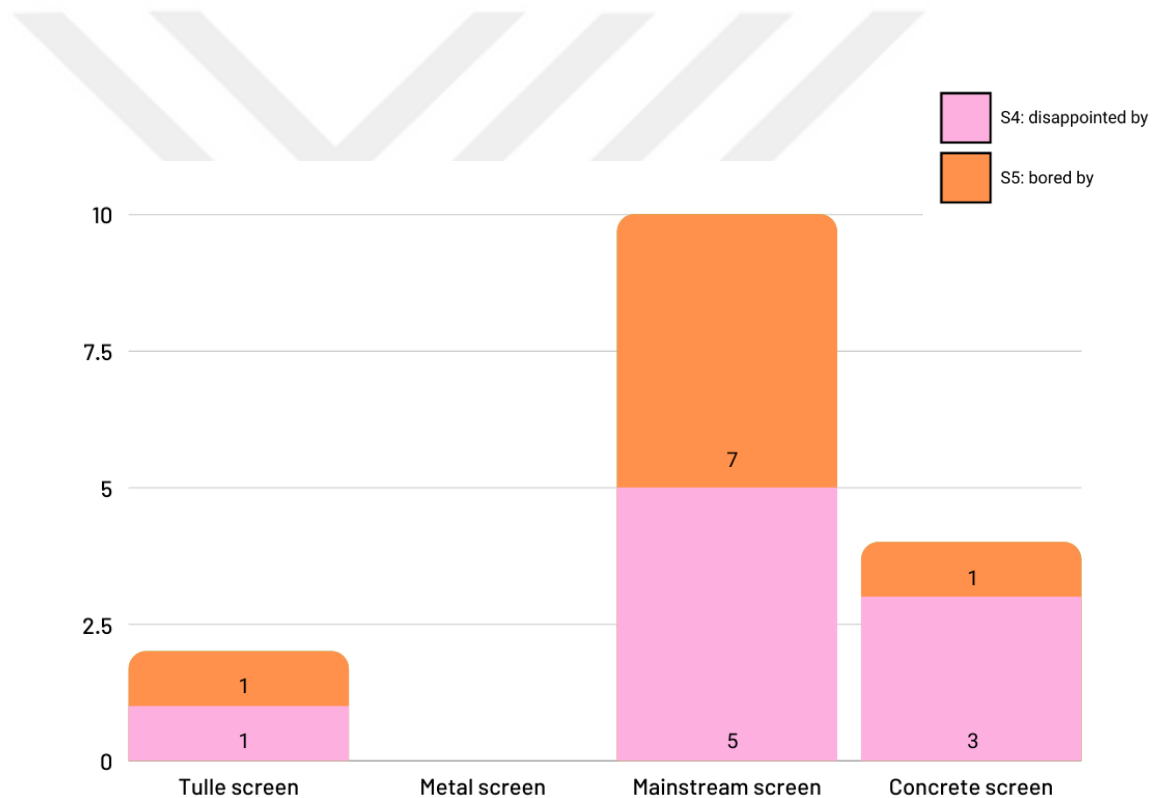


Figure 23. Stacked Graph for Frequencies of Negative Fill-in-the-blanks Responses

The following discussion chapter elaborates on the statistical findings of this study by examining them with references to previous studies in the field. In addition to that, the following chapter presents a response to the research questions and hypotheses mentioned in the methodology chapter.

CHAPTER VI

DISCUSSION

This chapter presents the results in relation to the existing literature. There were two main aims of this study, one of them was to investigate the impact of the materials of screen on space formation through observing different screen materials in exhibition spaces and the second was to analyze the relationship between the screen materials and visitors by addressing visitor attention and interaction. For the first aim, general aspects are provided based on the related literature addressing the materials of screen (Bruno, 2014; 2020; Friedberg 2006; Huhtamo, 2004; Manovich 2001; Mondloch, 2010;) and space formation (Parry & Sawyer, 2005; Sæther & Bull, 2020; Verhoeff, 2019; Wodiczko, 2006). Previous research has shown that screen does not only create a new layer with its material characteristic, but also becomes a part of the space architecturally (Sæther & Bull, 2020). In addition to this, visitor behavior has been another main point in exhibition studies. In this study, visitor behavior was divided as attention (Bitgood 2002; Bitgood, 2010; Bitgood, Patterson & Benefield, 1988; Falk and Dierking, 1992; Koran et al., 1984; Mehrabian, 1976) and interaction (Bitgood, 1992; Hein, 1998; Hooper- Greenhill, 2000), but also additional studies which specifically focused on the screen in the exhibition space (Bishop, 2019; Mondloch, 2010; Reiss, 2000; Verhoeff, 2019) have shown that the visitor is regarded essential for the completion of the exhibit object and its experience (Reiss, 2000). However, many studies about screen and visitor relationship in exhibition spaces, especially early studies, analyze this topic mainly from the perspective of media studies rather than exhibition and architectural perspectives. Therefore, the current study contributes to the literature on screen studies by exploring the intersection of architecture, media, and visitor studies in the exhibition context.

Since this study further investigates the screen materials from the visitor's perspective, it examines the screen preferences of the participants. Correspondingly, it was hypothesized that there is a significant correlation between the demographic characteristics and screen preferences of visitors. In this study, gender, education level and profession were examined as demographic characteristics' items. Analyzing the demographic characteristics of visitors have been one of the key factors in the previous research because as the studies by Falk and Dierking (1992) and Hood and Roberts (1994) states that demographic characteristics are highly influential on the experiences of visitors that leads to different attitudes and behavior types. This statement also applies to the experience in front of a single object, since each visitor interprets it differently due to their different characters, previous experiences, and expertise (Weil, 1997). Also, in line with this study, Pearce (1994; 1998) and Hein (1998) suggested that the response, both emotional and cognitive, to the material property of the exhibits may differ according to different visitors. In order to test H1, the frequency of answers given to the question 'Which screen would you prefer the most?' (Interview Question-1) were measured firstly. Then, further analysis was made to understand whether there is a significant correlation between the demographic characteristics and screen preferences of visitors or not. According to the findings, H1 was not completely rejected due to differences in findings of different demographic characteristics' items and partly supported by the profession item.

H1: There is a significant correlation between the demographic characteristics and screen preferences of visitors.

While the majority of the screen preferences of participants in this study was resulted in favor of the tulle screen, findings related to H1 have shown that there is a significant correlation between profession item and screen preferences of visitors. It also lies in line with the studies of Bitgood and Patterson (1987), Macdonald (2011) and Sedmak and Brezovec (2017) since it was stated as one of the influential demographic characteristics in visitors' behavior. On the other hand, there was no

significant correlation found between gender item and screen preferences of visitors. However, according to the studies of Bitgood, Patterson and Benefield (1988), Hein (1998), and Falk (2009) gender item affects the preferences and perceptions of people. In terms of the educational level and screen preferences of the participants, findings have shown that, again, there was no significant correlation among them. This result may have occurred due to the cluster type of this study, because in the previous research, education level was examined more generally and bachelor's, master's and doctorate levels were considered in one group. As an example, it was analyzed in the studies of Sedmak and Brezovec (2017) that bachelor, master and doctorate levels were grouped under 'upper education' and the same group was also seen in the study by Macdonald (2011).

Besides, the preference for the tulle screen by the majority of the participants may be influenced by the content of the screen. Since the content was a window view shot from the inside of a house, the tulle screen may be associated with the curtains by the participants that we use with our windows in houses. Therefore, they may establish a direct relation with the content of the video, and this might be why participants were inclined toward it. Also, since the tulle screen was translucent compared to other screens in this study, the projected video content was half-visible from the back of the screen installation. This may also have encouraged the participants to turn around and therefore, the tulle screen may have facilitated a higher level of interest. Although screen installations are used for a long time overall, there are very few studies that have focused on the screen in exhibition spaces specifically and there was no quantitative research found to follow. This shows a necessity for further research in this specific area, too.

In this study, it was hypothesized that the screen materials have an impact on the architectural layout from visitors' perspective. In order to test H2, the answers given to the question 'Do you think that the screens are the architectural elements and partitions of the space, or do you think that they are just media screens?' (Interview Question-3) were measured whether screens were architectural elements or just

media screens. According to the findings, H2 was not rejected.

H2: Screen materials have an impact on the architectural layout from visitors' perspective.

In order to further analyze these findings, its correlation to the demographic characteristics of participants was tested since it was not investigated in the prior studies and no significant correlation was found in terms of profession, gender and education level items. While looking in more detail, it was found that participants have used repetitive keywords while stating that screens were architectural elements. The most frequently used keywords were 'physical form' and 'layout' which establish a direct connection with an understanding of screen being a division in the architectural space and this finding seems to be analogous to the studies of Sæther and Bull (2020) and Bruno (2014; 2020). On the other hand, the other two keywords 'volume' and 'circulation' were used less than the two mentioned above. Also, these findings were in line with the related literature on the screen material characteristics by Friedberg (2006), Mondloch (2010) and Bruno (2014; 2020). The relationship between these four keywords and demographic characteristics of the participants were also explored and a correlation was found between these keywords and education level item of the demographic characteristics, although to the best knowledge of the author there was no prior study found examining this relationship. Overall, the findings showed that screens change the material characteristic of the exhibition space too (Friedberg, 2006). Additionally, it demonstrated that screens integrate themselves more than standing objects as it was stated in the study of Parry and Sawyer (2005).

Another hypothesis tested in this study is that screen materials have a significant impact on the visitor behavior in exhibition spaces. Visitor behavior was explored with two parameters that are visitor attention and interaction. In order to test H3, firstly timing data items were analyzed to assess visitor attention (H3a). Then, analysis of observation parameters checklist was made and lastly, emotional responses were examined to assess visitor interaction (H3b). The findings related to

H3 showed that, the majority of the participants stated that each material presented different experiences and their actions varied accordingly. Thus, H3 was not rejected. This result presents a consistency especially with the studies of Reiss (2000), Mondloch (2010) and Bishop (2019). In a study by Mondloch (2010), it was stated that the screen-oriented cultural habits of the people performed a critical role on interpreting the screen in the exhibition space. Regarding the studies of Bishop (2019), integration of the screens to the art production influenced this screen-viewer relationship. Findings demonstrated that, the majority of the participants in this study addressed the screens differently and indicated their specific activities while they confronted with each screen. This is also coinciding with the study of Reiss (2000) as it was remarked that the viewer can be offered specific activities and their relationship differs accordingly. Another striking point in the findings delivered that, the participants have associated the textures of the materials of screens with their viewing experiences and indicated some comparisons and in these comparisons, the tulle screen was the most apparent one among all screens. This finding lies in parallel with the studies of Bishop (2019) and Verhoeff (2019), as the participants of the study have heightened awareness, sensory immediacy and differed behavior confronting different screen materials.

H3: Screen materials have a significant impact on the visitor behavior in exhibition spaces.

H3a: Screen materials have a significant impact on the amount of attention paid by the visitor in the exhibition space.

H3b: Screen materials have a significant impact on the number of visitor interactions with exhibition space.

Timing data analysis was made in order to explore another key point in this study. Accordingly, H3a was tested which posits that screen materials have a significant impact on the amount of attention paid by the visitor in the exhibition space. Regarding the analysis of timing data, it was found that overall, the least time was spent in front of the mainstream screen (2'14") and the most time was spent in front of the tulle screen (4'39"). In terms of time spent, the concrete screen followed the

tulle screen in the second place (3') and the metal screen has ranked the third place among the screens (2'30"). While looking screen by screen, average time spent was the highest in the tulle screen ($M=1.36$, $SD=0.90$) and the lowest in the metal screen ($M=1.05$, $SD=0.48$), although the minimum and maximum time spent in the metal screen were not the lowest ones resulted in this study. Also, timing data were analyzed according to the demographic characteristics of the participants, and it was found that time spent with at each material was different and the tulle screen was the most highlighted one among the screens. These findings provided support for H3.

As it was stated in the earlier sections, some arrangements were made in order to minimize the attention differences between the screens and to highlight their material differences to the extent possible and in line with the utilities of the area where the exhibition study was held. These arrangements included the placement, direction, size, shape, and dimension characteristics of the screens, as they were made identical to each other to align with the previous studies (Falk & Dierking, 1992; 2011). In terms of placement, same amount of space was left for the participants to discover each screen from all around and to prevent the 'primary object' effect as suggested in the previous studies by Miles et. al (1982), and correspondingly in the findings, the majority of the participants did not state any priority perceived from the placement of the objects. Furthermore, screens were placed sequentially to allow the participants to explore exhibit components one by one as it was suggested in the prior studies (Bitgood 2002; 2010). As it was found, all participants have explored all screens without missing any of the exhibit components. In terms of direction-related arrangements, video-projected sides of all the screens were turned towards the entrance of the participants, combining with the ambient sound added to the exhibition experience to stimulate a new sense and to highlight their multi-sensory modalities and thus increase the visitor attention as stated by Peart (1984) and Bitgood (2002). Connected to that, the findings indicated that all the participants have noticed their multi-sensory aspects right after they entered the exhibition space.

All screens were made in the same size (100x180 cm) and large in a sense that the participants cannot hold or move, in order to hold the attention better than smaller

objects (Bitgood, Patterson & Benefield, 1988). In terms of the shape of the screens, a previous study by Bitgood (2010) suggested that familiar shapes of the exhibits attract more attention compared to unfamiliar ones. Although all screens were three-dimensional, their thicknesses were different. The majority of the participants stated that their impact on both the space and the visitor were impacted differently and this was in line with the previous study by Peart (1984). Lastly, according to the previous studies suggested by Koran et al. (1984) and Bitgood (1992), exhibits which the visitors are allowed to touch and/or manipulate may generate more elongated attention. Accordingly, in the findings participants of this study stated that their visiting time was affected by these effects, since they could have more chance to 'explore'.

In terms of examining visitor interaction to test H3b, participants' movement and activities during their visit to the exhibition space were recorded into the observation parameters checklist developed by the researcher in this study. After visiting, participants were asked to determine their interest, knowledge, engagement and inspiration levels and diversity ratings on a 5-Scale Likert Questionnaire.

To achieve the results of the observation, frequencies of each observation parameter were analyzed screen by screen in order to identify the most interacted one among all the screens. The findings related to the observation parameters showed that the tulle screen was the most successful one in sustaining the attention by reflecting an interaction between the visitor and itself as stated by the previous study of Bitgood (1992). Although, the tulle screen was the most highlighted one among all screens in terms of the frequencies of the actions observed, the findings showed that almost all the frequencies were very high and showed a diversity. Findings related to the participants' rating of their interaction levels showed that the overall interaction was 'high'. By looking screen by screen, it was found that the majority of the interaction level was 'very high' in tulle and metal screens, and these were followed by the concrete screen as 'high' and lastly mainstream screen as 'low'. Another explanation of the tulle screen being the most attracted and interacted one may be related to the 'familiarity' theory mentioned in few previous studies (Hein, 1998;

Hooper-Greenhill, 2000). Accordingly, prior knowledge and experience of the certain exhibit material may determine the visitor's behavior and experience (Hein, 1998; Hooper- Greenhill, 2000). It was seen that the majority of the participants explored not only the exhibit but also its surrounding and atmosphere (frequencies of 'looking around' and 'looking above/below') as this was another visitor interaction indicator (Hein, 1998).

Another item to analyze was the emotional feedback received from the participants as it could not be detached from the visitor behavior according to the studies of Hooper-Greenhill (2000). As a result of the findings, the majority of the participants indicated that their feeling of engagement and inspiration levels were very high. Participants' emotional feedback was examined under positive and negative aspects. In positive aspects, the majority of the participants stated that they were surprised and inspired by the tulle screen. Also, the tulle screen was the one that the participants were most interested in and most enthusiastic about. These findings were in line with the attention parameters and participants' overall feedback on screens. Regarding the negative aspects, the results were not opposite to the previous findings as the majority of the participants stated that they were disappointed and bored by the mainstream screen.

Another discussion point may be on ordinariness of the screens designed in this study. Screven (1986) uses the word 'novelty' for exhibit elements that are out of the ordinary and states that novel objects attract more attention and interest. Of course, this also means that sometimes they can also distract the visitors from the main point of the exhibition which might be the reason for the visitors to look at the screen itself rather than focusing only on the video content. According to the findings of this study, the following chapter presents the conclusions including the limitations of this study and suggestions for the future research on this specific area.

CHAPTER VII

CONCLUSION

The screen is an integral part of our daily lives in different forms and as well as increasingly ubiquitous in art spaces worldwide (Mondloch, 2010). Its presence in art spaces increases every day with developing technologies and its diverse forms. From the birth of the screen with cinema, various definitions have been made for the screen from different perspectives since its use expanded over time by especially being an informative tool (Huhtamo, 2004). On the other hand, screens were used in creating art installations besides being used as informative display instruments. Undoubtedly, all of these also affected the definition of screens in art spaces and has led to the generation of other definitions, such as the screen being a material entity (Bruno, 2020; Friedberg 2006; Mondloch, 2010), presenting itself as a standing piece of furniture (Huhtamo, 2004), creating surfaces and material textures (Chateau & Moure, 2016; Lindsay, 2000; Manovich, 2001) and introducing an environmental situation (Sæther & Bull, 2020; Verhoeff, 2019).

Starting from the 1960s, artists started creating screen-based projected and moving image installations and this led to a deep exploration of staging vision, communication, and knowledge by creating distinctive experiences for visitors (Bruno, 2020; Mondloch, 2010; Sæther and Bull, 2020). In relation to this, previous research in the area has shown that the screen becomes part of the architecture at first by creating a division in the space (Bruno, 2020; Sæther and Bull, 2020). By transforming into an architectural element in the space, the screen also influences the surrounding area with its separative characteristic (Bruno, 2020; Friedberg 2006;

Huhtamo, 2004; Manovich 2001; Mondloch, 2010) and overall, integrates itself rather than merely being a standing object (Parry & Sawyer, 2005).

On the other hand, while discussing the screen in the exhibition space the most important aspect is visitor behavior to understand the screen's influence. Previous research has shown that the visitor is regarded as essential in order to complete the exhibit and experience the exhibition space (Reiss, 2000). According to previous research, screen and visitor relationship emphasizes sensory immediacy, physical participation, and a heightened awareness of viewers (Bishop, 2019) which is also in line with the attention and interaction studies in exhibition spaces. Attention and interaction studies (Bitgood, 1992; 2002; 2010; Falk & Dierking, 1992; Hooper-Greenhill, 2000; Koran et al., 1984) have focused on different aspects, however in this study, visitor perspective was highlighted in line with the aims of the study. In relation to the aforementioned literature review, in this study, further exploration of space formation impact of the materials of the screen were made accordingly from the perspective visitors. As stated in the previous chapter, many studies on screen and visitor relationship examines this relationship from the perspective of media studies rather than architectural perspective, this study contributes to the literature by exploring the intersection of architecture, media, and visitor studies in the exhibition context. The results revealed that screen materials have an impact on the architectural layout from visitors' perspective in terms of its physical form and its influence on the layout directly as it is evident from the answers.

Another important finding was about the screen preferences of the participants since it reveals another perspective to the materials of screen in this study as it was stated in the previous research by Pearce (1994; 1998) and Hein (1998). Additionally, previous studies have also suggested that demographic characteristics are highly influential on the experiences of visitors that lead to different attitudes and behavior types (Falk & Dierking, 1992; Hood & Roberts, 1994). Gender, education level and profession items were examined as demographic characteristics' items and it was expected that all these items have significant correlation with the screen preferences. According to the previous studies, all these items influenced the preferences of

visitor in exhibition spaces. Although, the findings were not showed consistency and showed differences between different demographic characteristics, the profession item showed a significant correlation with the screen preferences as it was in line with the studies of Bitgood and Patterson (1987), Macdonald (2011) and Sedmak and Brezovec (2017). On the other hand, there was no significant correlation found between gender item and screen preferences of visitors, although it was found influential in the previous studies Bitgood, Patterson and Benefield (1988), Hein (1998), and Falk (2009). This also found in the educational level and screen preferences, as it showed no significant correlation. As it was elaborated in the previous chapter, this finding may happen due to different clustering in the previous studies along with the small sample group.

Lastly, this study also focused on the relationship between screen materials and visitor behavior in exhibition spaces. In terms of visitor behavior, attention and interaction parameters were analyzed in this study. Previous research in the area suggests that visitors interpret the screen differently due to their screen-oriented background and cultural habits (Mondloch, 2010). In relation to that, findings demonstrated that the participants addressed the screens differently and indicated different activities while experiencing each screen. While the previous research focused on the exhibit objects generally and screens as informative tools used in exhibition spaces, this study contributes to the literature related to screens being exhibit objects in exhibition spaces.

Timing data was another important determinant in visitor behavior, and it was suggested that viewing durations were affected by various aspects in exhibition spaces. Since this study was conducted in a space that could be controlled and manipulated in parallel to the aims of the study, arrangements were made suggested by the previous studies (Bitgood 2002; 2010; Falk & Dierking, 1992; 2011; Koran et al., 1984; Miles et al., 1982) in order to minimize other attention effects and highlight the material differences only. According to the results, all participants have explored all screens without missing any of the exhibit components and all screens had affected them differently since they could have a chance to touch and manipulate the screens. In terms of visitor interaction, it was aimed that the materials

of the screen have a significant impact on the level of visitor interaction and the findings showed a consistency with this aim of the study. As the previous studies suggested different interactions with different materials (Bitgood, 1992; Hein, 1998), the tulle screen was the most highlighted one in terms of attention and interaction parameters in terms of visitor behavior. This result was examined by considering the probability of prior knowledge and experience with certain materials as found by Hein (1998) and Hooper-Greenhill (2000). Emotional feedback was another item, and the overall results showed that participants' engagement, attention, and interaction levels were high, and this shows a consistency with all the findings mentioned above. By investigating the emotional feedback of the participants, this study defines different reactions to certain materials of the screen that may be used in the future exhibition practices.

This study might be beneficial for artists, exhibition designers, curators, and also media professionals that work in relation to screen studies. This study only examined few of the materials which were chosen from the field of architecture, although there are many materials that could work as screens. Because since material itself is a vast topic not only for the architectural field but also art and media fields, exhibition practices can be expanded with different properties of different materials, thus enabling different visitor experiences. This study approaches screen as more than an image in media field, or a standing object in design field, or a division in architectural field, or an exhibit in art field, but addressing all these aspects together under one roof by benefiting from all the offered notions. Another contribution that this study offers is a rich understanding to the screen materials by presenting different screen installations from different artists that have changed the perspective of screen installations such as Nam June Paik, Bill Viola, Jeffrey Shaw, Krzysztof Wodiczko and so on. Together with a wide perspective presented from different fields, these installation examples have grounded the understanding of the materials of the screen and its relation to the existing literature on art, media, design, and architecture fields. Another contribution of this study was a presentation of a quantitative research along with a qualitative one. As mentioned in the previous chapter, there were very few studies that have focused on the screens specifically and no quantitative research was found to follow.

This study also has some limitations that could be addressed better in future studies. The greatest limitation is the COVID-19 pandemic and the way it affected the direction of this study. Exhibition spaces were significantly affected by the pandemic along with many other physical spaces. Due to pandemic conditions, the locations to conduct this study were very limited, and therefore instead of a regularly visited exhibition space, the exhibition hall belonging to İ.D. Bilkent University, which is only an event-specific venue, had to be preferred. For this reason, the participants of the exhibition work had to be selected only from İ.D. Bilkent University students, where the venue is located because of the COVID-19 regulations in the university campus. Another limitation was accepting the participants according to a specific time sheet that were developed in parallel to the opening and closing times of the study venue since this has caused some overlaps between the participants. Also, there was a time limitation to reserve the venue therefore it affected the number of the participants in this study. Because of the social distancing rules and using mask obligation applied to this study, participants' interactions with the researcher were limited due to health concerns. Overall, this study would give more substantial and outstanding results if it could be conducted in a pandemic-free environment, and this could be another motivation to further investigate this topic.

COVID-19 limitations, on the other hand, might have brought some advantages in terms of controlling the exhibition experiment. In studies by vom Lehn et al. (2005) and Serrell (2002), visits with companions are different than visits alone since the presence of others can influence the level of interaction and participation rates. Since participants had different time slots in the exhibition experiment to visit one by one, no one did not influence by another participant in the environment and therefore, controlling both the environment and participant was easier compared to the exhibition environment where many people present at the same time.

For future studies, researchers could consider investigating different materials in the context of the screen materials, and also the screen-visitor relationship generated

from these different material characteristics. To have a better understanding of the results of this study, future studies could be conducted in various exhibition spaces that have different architectural layouts, different architectural styles, and different programs. On the other hand, researchers may consider including more visitor types that have different demographic characteristics in their research for exploring visitor behavior from a more comprehensive perspective. Expanding this study might also help to reconsider screen practices in exhibition spaces by art, media, and architecture practitioners.



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APPENDICES

APPENDIX A. Student Consent Form

CONSENT FORM

Consent to Participate in a Research Study

Title: The Relationship of Screen Material with Visitor Behavior in Exhibition Spaces

Purpose: The purpose of this research is to investigate the impact of the screen materials on space formation through observing different screen materials in exhibition spaces and also, to explore the relationship between the materials of screens and visitor, by addressing visitor behavior that is divided as attention and interaction. This research relates to the master thesis of Evrim Karacan who is a graduate student of the Department of Interior Architecture and Environmental Design at Bilkent University. In this study, 32 people who were finished their undergraduate education in art, design, media, and/or architecture fields with an age range around 25, will experience the exhibition study which installed in FADA Exhibition Hall at Bilkent University. This study begins on 18.10.21 and ends on 22.10.21.

Procedure: Prior to the exhibition study, participants will be informed about the exhibition concept and the recording of their visit. Then, participants will enter the area and they will first encounter with the introductory wall, which includes the general information about the exhibition and the content of the exhibits. Then, all participants will fill out the demographic questionnaire covering information about their age, gender, profession with an additional question regarding their frequency of exhibition visit. Then, participants will be introduced to the exhibition space where they will have a chance to move around freely one by one in

compliance with the pandemic conditions. During each visit, unobtrusive observation will be made by the researcher and time recorder in order to have the data of visitor attention and interaction. After participants complete their exhibition visits, they will be asked semi-structured interview questions and finally, they will fill out the survey questionnaire consisting of Likert-scale questions as feedback of their experience with different screen materials and one question to gather participants' feelings and emotions about this study.

Benefits and Risks: This research aims to investigate the impact of the screen materials on space formation through observing different screen materials in exhibition spaces. This study, also, makes an analysis of the relationship between the materials of screens and visitor, by addressing visitor behavior that is divided as attention and interaction. The result of the research may enhance material experiences of the screen in exhibition design by creating new potentialities and therefore, visitor experiences may be explored. Also, interdisciplinary studies combining architecture and media may be enriched since there are spatial components of screen studies where architecture may be involved. I fully understand that the current research does not entail any physical or emotional risks other than those encountered in everyday life. There is no personal benefit to me.

Compensation: I will not be compensated for my participation in this research.

Confidentiality/Privacy: Any information obtained in this research will only be reported and published for scientific purposes. As a participant, any information about my identity remains confidential and placed in investigator's locked secure storage for three years after the completion of the research study.

Participation: I am one of 32 participants who will participate in this research study. My participation is voluntary. If I feel uncomfortable as a participant, I can decide to withdraw from participation in this research study by informing the researcher at any time or I can be excluded from the research study if it is deemed necessary by the researcher. If I have question regarding this research study, I can contact the investigator, advisor of the

investigator or Bilkent University Local Ethics Committee. Research study has been reviewed and approved by Local Ethics Committee of Bilkent University.

I have read and understood the information provided to me. I voluntarily participate in this study. I have been given a copy of this consent form.

Participant No: _____

Date: _____

Name of the Participant: _____

Signature: _____

E-mail: _____

Signature of the Investigator: _____

Date: _____

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APPENDIX B. Demographic Questions

Please answer the following questions about your socio-demographic variables including age, gender and frequency of visiting exhibitions.

Participant Information

Participant No: _____

Screen Order: _____

Age: _____

Gender: ☐ Woman ☐ Man ☐ Other

Education Level: ☐ Bachelor's ☐ Master's ☐ Doctorate

Profession: ☐ Architecture ☐ Media ☐ Design ☐ Art

How often do you visit art related spaces, such as museums, galleries etc.?

☐ Every month

☐ 10 - 12 times in year

☐ 6 - 9 times in year

☐ 2 - 5 times in year

☐ 1 time in year

APPENDIX C. Timing Data and Unobtrusive Observation Parameters Checklist

Participant No.	Total visit time (in minutes) for visitor attention:			
	Screen 1:	Screen 2:	Screen 3:	Screen 4:
Observation parameters for visitor interaction				
Activities			The number of times of performing this action	
Stop	O Yes Screen No:	O No		
Take Photos	O Yes Screen No:	O No		
Bend Body	O Yes Screen No:	O No		
Lean	O Yes Screen No:	O No		
Touch the exhibit	O Yes Screen No:	O No		
Looking repeatedly	O Yes Screen No:	O No		
Looking around	O Yes Screen No:	O No		
Looking above/below	O Yes Screen No:	O No		
Other activities....	O Yes Screen No:	O No		

APPENDIX D. Semi-structured Interview Questions

Participant No:
Please answer the following questions about your understanding and opinion on screen installations and their architectural impacts on the exhibition space. 1. Which screen would you prefer the most?
2. How would you describe your interaction with all these different screens?
3. Do you think that the screens are the architectural elements and partitions of the space, or do you think that they are just media screens?
4. How would you describe the architectural effects of the screens and their impact on the architectural layout?

APPENDIX E. Survey Questions

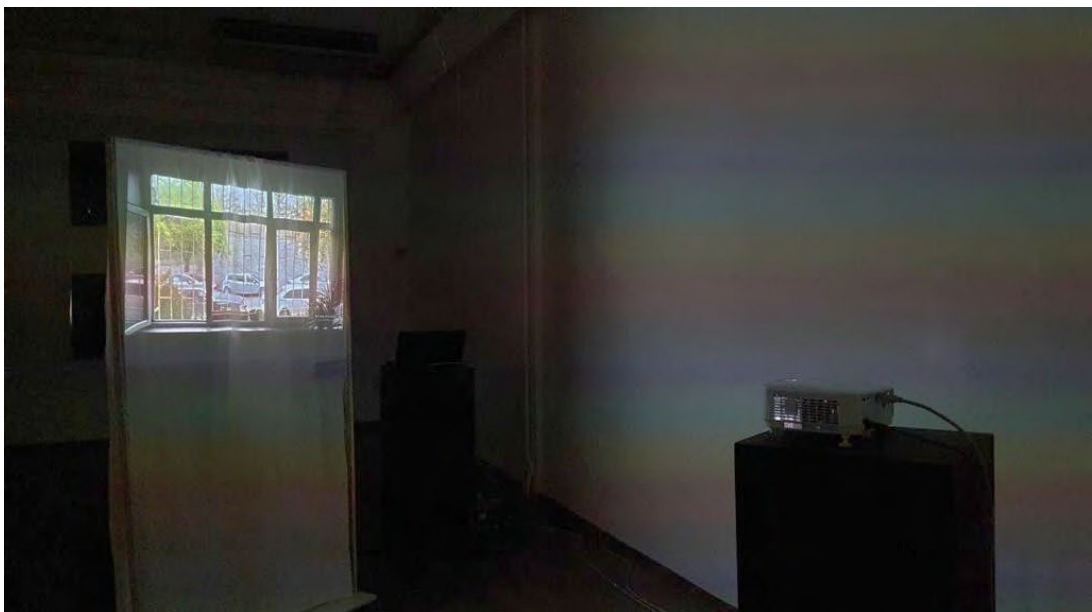
Participant No:						
Please select only one number from 1 to 5 to indicate your agreement about your experience with different screen materials with the below phrases as described.						
		Very low	Low	Moderate	High	Very high
1	How would you rate your interest in terms the screen design in exhibition spaces?	1	2	3	4	5
2	How would you rate your knowledge of the screen design in exhibition spaces?	1	2	3	4	5
3	How would you rate the diversity of screen materials' characteristics?	1	2	3	4	5
4	How would you rate your feelings and emotions in terms of engagement with the exhibition?	1	2	3	4	5
5	How would you rate your inspiration level after visiting the exhibition?	1	2	3	4	5
6	How would you rate your overall interaction with screens?	1	2	3	4	5
7	How would you rate your interaction with the Tulle screen?	1	2	3	4	5
8	How would you rate your interaction with the Metal screen?	1	2	3	4	5
9	How would you rate your interaction with the Mainstream screen?	1	2	3	4	5
10	How would you rate your interaction with the Concrete screen?	1	2	3	4	5
11	Could you please complete any of the following sentences you feel apply to you? I was: • Surprised by..... • Most interested in..... • Inspired by..... • Disappointed by..... • Bored by..... • Most enthusiastic about.....					

APPENDIX F. Demographic Characteristics of the Participants

Participant No	Screen Order	Age	Gender	Education Level	Profession	Visiting Frequency
P1	1234	22	Woman	Master's	Media	10-12 times
P2	1234	28	Woman	Doctorate	Architecture	6-9 times
P3	2134	28	Woman	Doctorate	Architecture	2-5 times
P4	1324	28	Woman	Doctorate	Architecture	6-9 times
P5	2314	27	Woman	Doctorate	Architecture	6-9 times
P6	3124	26	Woman	Doctorate	Architecture	1 time
P7	3124	34	Man	Doctorate	Art	2-5 times
P8	3214	21	Woman	Master's	Media	Every month
P9	2341	27	Man	Master's	Media	6-9 times
P10	2143	32	Woman	Doctorate	Architecture	Every month
P11	3142	28	Man	Doctorate	Architecture	6-9 times
P12	1342	34	Man	Doctorate	Architecture	6-9 times
P13	4123	31	Woman	Doctorate	Architecture	6-9 times
P14	3241	30	Woman	Doctorate	Architecture	2-5 times
P15	4321	24	Woman	Master's	Art	Every month
P16	1243	24	Man	Master's	Media	2-5 times
P17	1243	25	Man	Master's	Media	6-9 times
P18	2143	22	Woman	Master's	Media	1 time
P19	4123	21	Man	Bachelor's	Design	2-5 times
P20	1423	20	Man	Bachelor's	Media	6-9 times
P21	1432	31	Woman	Doctorate	Architecture	6-9 times
P22	2431	28	Man	Doctorate	Architecture	6-9 times
P23	2413	23	Woman	Master's	Architecture	6-9 times
P24	3412	29	Man	Master's	Art	Every month
P25	3421	24	Man	Bachelor's	Media	Every month
P26	2413	25	Woman	Master's	Design	6-9 times
P27	3421	23	Woman	Bachelor's	Media	6-9 times
P28	4312	28	Man	Master's	Media	Every month
P29	4321	22	Man	Bachelor's	Media	2-5 times
P30	4231	23	Man	Master's	Art	10-12 times
P31	4132	22	Man	Master's	Architecture	10-12 times
P32	4213	21	Man	Master's	Architecture	6-9 times

In the screen order, 1: tulle screen, 2: metal screen, 3: mainstream screen, 4: concrete screen.

APPENDIX G. Photos from the Exhibition Experiment



APPENDIX H. İhsan Doğramacı Bilkent University Ethical Committee Report



Bilkent Üniversitesi

Akademik İşler Rektör Yardımcılığı

Tarih : 11 Ekim 2021

Gönderilen : Halime Demirkan

Gönderen : H. Altay Güvenir
İnsan Araştırmaları Etik Kurulu Başkanı

Konu : “The materiality of ...” çalışması etik kurul onayı

Üniversitemiz İnsan Araştırmaları Etik Kurulu, 11 Ekim 2021 tarihli görüşme sonucu, “The materiality of the screen on space formation and visitor behaviour” isimli çalışmanız kapsamında yapmayı önerdiğiniz etkinlik için etik onay vermiş bulunmaktadır. Onay, ekte verilmiş olan çalışma önerisi, çalışma yürütücüleri ve bilgilendirme formu için geçerlidir.

Bu onay, yapmayı önerdiğiniz çalışmanın genel bilim etiği açısından bir değerlendirmedir. Çalışmanızda, kurumumuzun değerlendirmesi dışında kalabilen özel etik ve yasal sınırlamalara uymakla ayrıca yükümlüsünüz.

Kovid-19 salgını nedeniyle konulmuş olan kısıtlamaların yürürlükte olduğu süre içinde, tüm komite toplantıları elektronik ortamda yapılmaktadır; aşağıda isimleri bulunan Bilkent Üniversitesi Etik Kurulu Üyeleri adına bu yazıyı imzalama yetkisi kurul başkanındadır.

Etik Kurul Üyeleri:

Ünvan / İsim	Bölüm / Uzmanlık	
Prof.Dr. H. Altay Güvenir	Bilgisayar Mühendisliği	Başkan
Prof.Dr. Erdal Onar	Hukuk	Üye
Prof.Dr. Haldun Özaktaş	Elektrik ve Elektronik Müh.	Üye
Doç.Dr. Işık Yuluğ	Moleküler Biyoloji ve Genetik	Üye
Dr. Öğr. Üyesi Burcu Ayşen Ürgen	Psikoloji	Üye
Doç.Dr. Çiğdem Gündüz Demir	Bilgisayar Mühendisliği	Yedek Üye
Dr. Öğr. Üyesi A.Barış Özbilen	Hukuk	Yedek Üye

Kurul karar/toplantı No: 2021_10_11_01