

# **Experiencing the museum through visitors' eyes**

A study into the influence of the museum experience on visitors' perceived brand image and loyalty.

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## **Summary**

In this study, the effect of the museum experience on brand image and loyalty was investigated. Furthermore, the differences between males and females, participants with a positive and negative visitor experience, and the identity-related profiles Explorers and Facilitators were investigated. Two studies were performed to answer the research question and to measure the differences between parents visiting the museum on their own versus as a family. Both studies were conducted at museum TwentseWelle, located in Enschede, The Netherlands.

The museum experience includes everything that is connected to the museum; from the exhibitions to the museum restaurant and gift shop. In order to measure the museum experience, three models for measuring the impact of the environment on consumers were used. This led to a new museum experience model consisting of the physical, social, and socially-symbolic dimension. Wayfinding is part of the physical dimension and was dealt with extensively in this study. In order to satisfy and attract new visitors, the effect of the museum experience on brand image and loyalty was measured. Both qualitative and quantitative measures were used in this study: wayfinding task, in-depth-interview, and questionnaire. By means of the wayfinding task, participants' wayfinding performance was measured, and participants experienced the museum visit. The in-depth-interview was used to gather information about the wayfinding performance and process. With the aid of heatmaps, the movements of museum visitors were visualized. Finally, the questionnaire was applied to measure the museum experience, brand image, and loyalty.

Results of this study show that the experience of a museum visitor changes their perceived brand image and creates a specific and content related brand image. Also, this study revealed that most participants associated educational and intellectual related traits with the museum. Loyalty is influenced by the museum experience as well. Participants with a positive museum experience were significantly more loyal to the museum than participants with a negative museum experience. This study also shows that the socially-symbolic dimension is a predictor of loyalty. One group difference was found in this study; females completed the wayfinding task in a significantly shorter time and distance than males.

This study provides new insights in the influence of the museum experience on brand image and loyalty, and shows that the socially-symbolic dimension is an important new aspect of the museum experience.

**Keywords:** museum experience, wayfinding, brand image, loyalty, identity-related profiles, visitor motivations.

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## Introduction

In 1993, the International Council of Museums defined a museum as a non-profit institution that serves the society and its development with exhibits in order to educate and enjoy the public (Cox, Radbourne, & Tidwell, 1998). Nowadays, museum should not focus merely on their exhibitions. Research showed that the social and recreational experience of a museum visit are as important or even more important in satisfying the museum visitor, as the educational and intellectual experience (Kotler, & Kotler, 2000; Kotler et al., 2008; Sheng, & Chen, 2011). Since consumers have a broad choice in how to spend their leisure time, museums can stand out by creating a brand. The image of a brand can be influenced by the opinions of other people. In this time of social networks and instant dissemination of opinions, a brand image relies more than ever on personal experiences. In particular, negative reviews and experiences will quickly damage a brand image. Therefore, it is interesting to investigate the visitors' experience and how this influences the brand image. Whether a museum visit is experienced as positive or negative depends on different aspects of the museum, such as social interaction or wayfinding (Kotler et al., 2008; Falk, & Dierking, 1992). The experience also depends on the motivations to visit a museum. Parents visiting the museum with their children might focus on the learning experience of their children, without their children, parents might focus on their own learning experience.

The studies of Falk and Dierking (1992) and Kotler et al. (2008) made clear what the museum experience is composed of. Since then, studies have been conducted that focused on a single aspect of the museum experience, such as background music (Chen, & Tsai, 2015), mobile application (Rhee, & Choi, 2015), and multi-sensory exhibition (Schorch, Walton, Priest, & Paradies, 2015). Also, studies have been conducted focussing on the effect of the museum experience on brand image. Literature of Kotler et al. (2008) and Wallace (2006) suggest that the museum experience influences the brand image of museum visitors. The study of Geissler, Rucks, and Edison (2006) revealed that factors such as permanent art collection, changing exhibitions, facilities, and perceptions of accessibility influence the perceived brand image, the intention to revisit, and create a positive word of mouth (WOM). These studies were among the first to investigate the effect of the museum experience on brand image and are the motive for the present research.

In the present research, two studies were performed to investigate the effect of the museum experience on brand image and loyalty. Furthermore, the differences between males and females, participants with a positive and negative visitor experience, and the identity-related profiles

Explorers and Facilitators were investigated. In Study 1, the target group was parents visiting the museum on their own. In Study 2, the focus lay on parents visiting the museum with their children. Both studies were conducted at museum TwentseWelle. In this museum, visitors learn about the cultural and historical heritage of Twente, a region in the Eastern Netherlands. The exposed museum objects range from regional costumes to textile machinery, as Twente used to be a centre of the textile industry. Regional culture and dialect are also part of the permanent exhibition.

Back in 2009, TwentseWelle had the ambition to create a brand. The museum's aim was to present a universal story against the background of Twente. TwentseWelle strived to create an inspiring and fascinating museum experience, by making use of a striking decoration and modern techniques. In the newspaper *Tubantia* of august 7th, 2015, an article was written about two parents visiting TwentseWelle with their two four-year-old children. According to the article, some dark sections of TwentseWelle scared the children. Darkness may scare a little child and therefore negatively influence the museum experience of the parents as well. When these parents visit the museum without their children though, the darkness might not bother them. So, the museum can be experienced differently by the same person resulting in a different brand image. This article also shows that a negative museum experience can lead to a negative word of mouth, and ultimately might lead to a negative perceived brand image of the receiver of the message.

TwentseWelle believes that their ambitions are not fulfilled yet, and wants to know what the perceived brand image of their visitors is and how to attract loyal visitors. The present study made an attempt to answer this question and thereby investigated if there is a difference between parents visiting a museum on their own versus as a family.

The main question that fits this objective therefore is:

*How does the museum experience affect visitors' brand image and loyalty? Do these variables show differences between males and females, participants with a positive and negative visitor experience, the identity-related profiles, and parents versus families?*

## **2 Theoretical framework**

In this section, the variables brand image, loyalty, and museum experience are elaborated. Furthermore, the relation between these variables and the visitors' gender and identity-related profiles, and parents visiting the museum on their own versus as a family are explained. Different literature and models are discussed and contribute to the formation of a conceptual model. The composition of this model is explained and presented at the end of this section.

### **2.1 Brand image & Loyalty: creating a positive brand association**

Consumers nowadays can choose between many recreational activities to spend their leisure time. Brands can make this choice easier. The interaction and experience the consumer has with the brand, in this case a museum, will create their brand perception (McGraw-Hill, 2010). Keller (1993) defines brand image as "perceptions about a brand as reflected by the brand associations held in consumer memory" (p. 3). These associations in turn, can be beliefs, ideas, impressions, thoughts, feelings and experiences the consumer has about the brand (Kotler et al., 2008; Sallam, 2014; Aaker, 1996). Brand image can contribute to a personality or character of the brand. Thus, a brand can be seen as 'kind' or 'sportive'. These personality attributes can show which emotions or feelings the brand does evoke (Keller, 1993). According to Aaker (1997), brand image can be measured through brand personality. She defines brand personality as: "the set of human characteristics associated with a brand" (Aaker, 1997, p. 347). Another measurement of brand image is the free association technique. When using the free association technique, the participant receives a stimulus and is asked to write down all words and terms they associate with this stimulus (Koll, von Wallpach, & Kreuzer, 2010). Researchers Low and Lamb (2000), and Matinez and de Chernatony (2004), have used this methodology in their studies. According to Matinez and de Chernatony (2004), the free association technique prevents participants from being influenced by certain research frames.

For museums it is important to develop and maintain "a unique and appealing brand image" since this influences "perceptions of decision convenience" (Geissler, Rucks, & Edison, 2006, p. 83). Factors such as permanent art collection, changing exhibitions, facilities, and perceptions of accessibility have an influence on the brand image of museums (Geissler, Rucks, & Edison, 2006). When the brand image is measured, a museum can start developing their marketing strategy and defining their brand identity. From then on, a museum can "position itself in the minds of consumers by building an association and an image that will reinforce the consumer's disposition to seek museum offerings. . . . Once established, a brand communicates qualities that people respect

and trust" (Kotler et al., 2008, p. 461). Ultimately, this leads to loyal visitors (Kotler et al., 2008; Kuflik, et al., 2011).

A loyal visitor serves as an information channel which connects their network with the museum, also known as 'word of mouth' (WOM) (Petrick, 2003). As stated by Petrick (2003), "true loyalty is a two dimensional concept comprised of both a psychological attachment (affective loyalty) and a behavioural commitment to the service or source" (p. 464).

Kottasz (2006) investigated the influences of atmospheric cues in the emotional responses and behaviours of museum visitors. This study showed that the museum atmospherics such as design, signage, and traffic flow influences the overall satisfaction and revisit intention. Studies of Bitner (1992), and Forrest (2013) also showed a relation between the physical environment and satisfaction of visitors. The social relationship between consumers and employees affects revisit intention and word of mouth (Rosenbaum, & Massiah, 2011).

## **2.2 The museum experience: seeing the museum through the visitors' eyes**

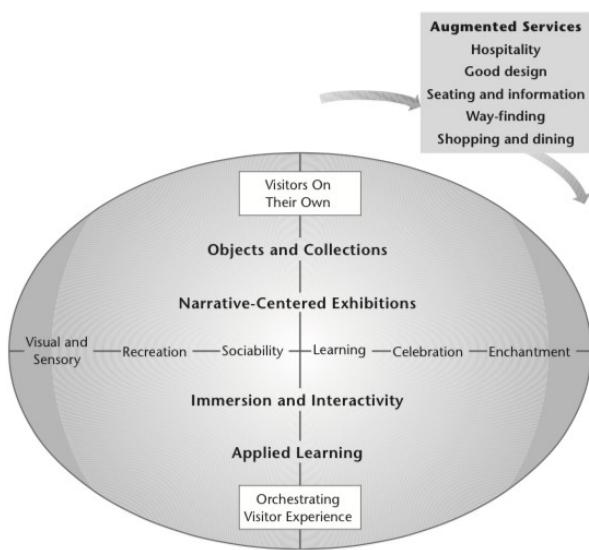
The museum visit is influenced by the experience one gains. This experience is broader than just watching an exhibition; it is everything that is connected to the museum. From visiting the museum restaurant till reading the brochure of the museum. "Experiences . . . are organized spatially, and generated through the manipulation of the material culture around us." (O'Dell, & Billing, 2005, p. 15). Kotler et al. (2008) and Falk and Dierking (1992) both created models that conceptualise the interacting aspects of museum experience. These models are discussed below.

### 2.2.1 The museum-going experience as described by Kotler et al.

According to Kotler et al. (2008), museums are unique places where visitors "encounter authentic, aesthetic, inspirational, and learning experiences" (p. 3) through exhibitions. These exhibitions give visitors the opportunity to escape from the routines of daily life. However, exhibitions are only a part of the museum experience. According to Kotler and Kotler (2000), casual museum visitors visit both the exhibits, and the restaurant and gift shop. For these visitors, "social and recreational experiences are as important or more important than educational and intellectual ones." (Kotler, & Kotler, 2000, p. 276). Some people visit a museum because they like to be among other people, others want to interact or educate their children. The interactions between museum staff and visitors are also a social aspect. This element of the museum-going experience can be improved according to Kotler and Kotler (2000). They state that, besides interacting with friends, family and other

visitors, visitors would like to interact with the museum staff. During special programs or tours visitors have the opportunity to ask questions, give feedback, and share their knowledge. “The latter activities enrich museum visits and humanize what can be intimidating objects and settings.” (Kotler, & Kotler, 2000, p. 278). The museum experience can also be influenced by services such as parking space, access to mass transit, security, seating areas, restaurant, shops, wayfinding, signs, and information supply concerning objects, collections, and exhibitions (Kotler, & Kotler, 2000). Services such as seating areas, a gift shop and a restaurant not only make the visit a diverse experience, it also makes visitors spend more time in the museum.

Figure 1 shows three dimensions of a designed museum-going experience. This model was created by Kotler et al. (2008). The horizontal axis demonstrates six experiences of a museum visit. The vertical axis underlines how visitors are involved with the museums exhibits (Kotler et al., 2008). So, an exhibition can consist of passive viewing of objects and collections, the telling of a story, active immersion and interactivity, and applied learning. The augmented services such as shopping and dining are a form of service to increase the social experience of visitors and the relationship between museum and visitor. According to Kotler and Kotler (2000), the augmented services are integrated in museums to develop and facilitate the museum experience. For example, hospitality might influence the social experience, wayfinding might influence the visual and sensory experience, and the learning experience can be positively influenced by information services.



*Figure 1. Dimensions of the Museum-going Experiences. By Kotler et al., 2008.*

#### *Wayfinding as part of the museum experience*

In the model of Kotler et al. (2008), wayfinding is one of the augmented services a museum should

focus on in order to create a positive museum experience. In the present study, wayfinding is dealt with extensively and therefore will be elaborated here.

Fewings (2001) defines wayfinding as “the process of finding one’s way in the geographical or built environment; that is, being able to identify one’s present location and knowing how to get to the required destination” (p. 177). In a museum setting, visitors can orientate by using distributed information, such as brochures, maps or staff members, or information derived from the physical environment, such as signage (Farr et al., 2014; Fewings, 2001; Li & Klippel, 2014).

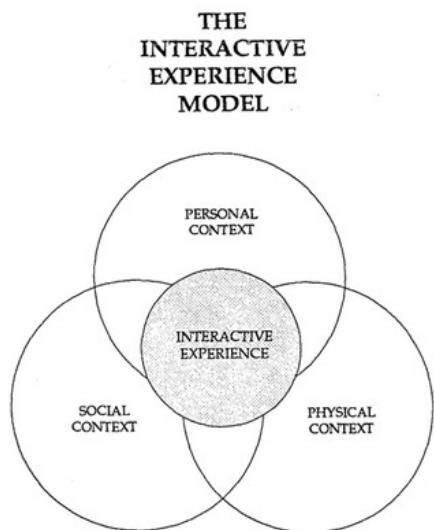
A difference in gender on fast and efficient wayfinding is suggested in multiple studies. The results of these studies, however, differ. The study of Chen et al. (2008) shows that males have better navigational performance than females. According to the study of Chebat et al. (2007), the wayfinding of females as compared to males are more efficient in shopping malls. Their study suggested that the effects of gender on wayfinding time are mediated by hedonistic values and the use of information sources such as people. The results showed a higher score for females on hedonistic values and the use of information sources, which leads to a reduce of wayfinding time. In addition, another study of Chebat et al. (2004), suggested a relation between gender and the use of landmarks as information. “Men use more landmarks, while women use more people as information sources” (Chebat et al, 2004, p. 1596).

Wayfinding can also be used by museums to lead their visitors to famous works of art, the museum restaurant and the gift shop (Farr et al., 2014). Research has shown that fast and efficient wayfinding can prevent someone from getting frustrated, and can contribute to a person's satisfaction and opinion of an environment (De Barros et al., 2007; Churchill et al., 2008).

### 2.2.2 Falk and Dierking's interactive experience model

Visitor-based roles are increasingly important for museums (Sheng, & Chen, 2011). In order to create a positive experience, the museum should see the museum experience through the eyes of a visitor. A way to generate this is by making use of Falk and Dierking's Interactive Experience Model (1992) (Figure 2). This model “conceptualizes the museum visit as an interactive experience, resulting in a range of possible outcomes such as increased knowledge, as well as changed attitudes or enhanced social skills” (Dierking, & Falk, 1992, p. 173). The model consists of three interactive contexts: the personal context, the social context, and the physical context. The personal context is the visitor's psychological aggregate of prior knowledge, experience, attitudes, motivation, and interests. The physical context consists of objects and artifacts, and the architecture and ambiance of the building: the atmospherics. Lastly, the social context includes the person who accompanies the visitor, and persons the visitor interacts with during the experience, such as other visitors or

museum staff (Dierking, & Falk, 1992). “At any given moment, any one of the three contexts could assume major importance in influencing the visitor. . . . It is the ebb and flow of these influences, and their interactions, that ultimately create each visitor's unique museum experience” (Dierking, & Falk, 1992, pp. 174-175). The interaction of the three creates the museum experience and contribute to the perception prior to, during and after the museum visit (Schokking, 2014).



*Figure 2. The Interactive Experience Model. By Falk and Dierking, 1992.*

The model of Falk and Dierking (1992) matches the model of Kotler et al. (2008). The social context corresponds to the sociability experience and augmented services such as hospitality. The physical context corresponds to the visual and sensory experience and augmented services such as good design, seating and wayfinding. Both models show that visiting the museum is a personal experience. For example, some people visit the museum to learn something about history or technology, others visit the museum at their holidays as a recreational experience.

### 2.2.3 The additional servicescape model of Rosenbaum and Massiah

The additional servicescape model (Figure 3) is an extension of Bitner's servicescape model and consists of physical, social, socially-symbolic, and natural environmental dimensions (Rosenbaum, & Massiah, 2011). These dimensions affect the “approach/avoidance decisions and social interaction behaviours” (Rosenbaum, & Massiah, 2011, p. 473) of visitors and staff. Figure 3 shows the framework of servicescape of Rosenbaum and Massiah (2011). This model covers all kinds of environments, and is therefore of relevance to this study. Since this model is not specifically designed for a museum setting, it will not be used in this form but complement the models of Falk and Dierking (1992) and Kotler et al. (2008).

The physical dimension corresponds to the physical context of the model of Falk and Dierking (1992) and the augmented services of Kotlers model (2008). The physical dimension is very influential; it creates an image of the organization, influences the behaviour, social interactions and satisfaction of the visitors (Bitner, 1992; Forrest, 2013).

Rosenbaum and Massiah (2011) made use of the social servicescape conceptualized by Rosenbaum and Montoya (2007), and Edvardsson et al. (2010) to define the stimuli of social dimension: staff, visitors, social density, and displayed emotions of others. Rosenbaum and Massiah (2011), state that “consumers consider their social relationship with focal employees a relational benefit that affects both their perceptions of overall firm quality . . . and their behavioural intentions, in terms of future patronage and word of mouth” (pp. 475-476). Besides staff, visitors also influence other visitors in approach/avoidance behaviour and social interactions. Also, social density can influence visitors' approach/avoidance behaviour, both positive and negative. According to Tombs and McColl-Kennedy (2003), this depends on whether a visitor intends to consume a service in private or with a group. Finally, in an environmental setting, staff and visitors can influence other visitors through their expressed emotions, both positively and negatively (Rosenbaum, & Massiah, 2011). The social dimension is applicable to different environments. Since staff and other visitors are also present in the museum setting and interaction occurs, the social dimension is applicable to the museum experience.

The socially-symbolic dimension serves “to notify ethnic group members that they are in unison with like others – that is, among members who shout the same cry, say the same words, perform the same actions, and share the same culture and historical experiences” (Rosenbaum, & Massiah, 2011, p. 478). Museums often have a specific theme that they adhere to and exhibit symbolic objects that fit those themes. A regional museum might attract more people from the region. These visitors might have a socially-symbolic connection with that museum. According to Kotler and Kotler (2000), this is very common since visitors like to celebrate important events of the past, especially in relation to their heritage.

The natural dimension relates to the natural aspects in an environment, the ability of an environment to hold the attention of visitors, and the compatibility of an environment. “When people are in compatible environments, they can engage in sociability that is free from the constraints that often hinder human interaction, such as their occupational role or socio-economic status” (Rosenbaum, & Massiah, 2011, p. 480).

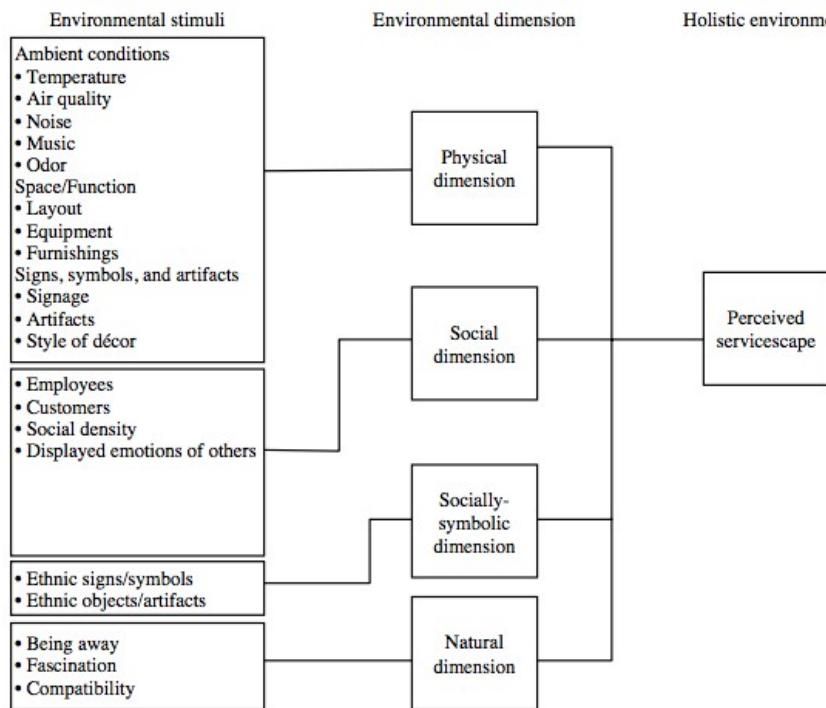


Figure 3. A framework for understanding four environmental dimensions of the servicescape. By Rosenbaum, & Massiah, 2011.

### 2.3 Identity-related profiles of Falk: visitor motivations in the museum context

When a person visits a museum, he or she does not have much influence on the physical dimension, and little influence on the social dimension. The impact of these dimensions is a personal matter. The interaction of the personal, physical and social dimension makes the experience unique to every individual (Dierking, & Falk, 1992; Forrest, 2013). Since the experience is personal, people might also have different reasons for visiting a museum (Kuflik, Kay, & Kummerfeld, 2010). According to Falk (2009), it is important to understand the different motivations people have for visiting a museum. “The visitor perceives the museum experience as satisfying if there is a good match between the visitor's identity-related needs and the museum affordances” (Kuflik et al., 2010, p. 2).

Falk (2011) introduced seven categories of “identity-related visit motivations” (p. 147):

- *Explorers* are curiosity-driven with a generic interest in the content of the museum. They expect to find something that will grab their attention and fuel their learning.
- *Facilitators* are socially motivated. Their visit is focused on primarily enabling the experience and learning of others in their accompanying social group.
- *Professional/hobbyists* feel a close tie between the museum content and their professional or hobbyist passions. Their visits are typically motivated by a desire to satisfy a specific content related objective.

- *Experience seekers* are motivated to visit because they perceive the museum as an important destination so their satisfaction primarily derives from the mere fact of having 'been there and done that'.
- *Rechargers* are primarily seeking to have a contemplative, spiritual, and/or restorative experience; they use the museum as a refuge from the work-a-day world.
- *Respectful pilgrims* visit out of a sense of duty or obligation to honor the memory of those represented by an institution/memorial.
- *Affinity seekers* are motivated to visit because a particular museum or more likely exhibition speaks to the visitor's sense of heritage and/or personhood.

(Falk, 2011, pp. 147-148)

By carrying out various investigations, Falk found out that the reasons for people to visit a museum and their post-visit descriptions of the experience could be classified in a few clusters (2011). These findings showed that the reasons for visiting an environment reflects what a person expects from a visit to a museum (Falk, 2011). Falk theorized "that it should be possible to cluster visitors to a wide array of museums into just seven broad, identity-related categories reflective of these suites of self-aspects" (Falk, 2011, p. 147). With respect to his model, Falk received some criticism about how the identity-related visitor motivations model can be used as a segmentation tool (Falk, 2011). In his paper (2011), Falk explains that visitors should not be divided into permanent categories if these categories provide little or no useful insights into visitors and their behaviour. He states that, "a critical characteristic of my approach is that I view my categories as ephemeral and situated" (Falk, 2011, p. 148). Falk "did not see visitors as 'types' . . . , but rather as enacting visitor-defined 'interest/need categories' on one particular day" (2011, p. 148). So, the museum can be experienced differently by the same person. When parents visit a museum with their children, they can act as Facilitators. And when parents visit a museum without their children, they can act as Explorers for example.

Kottasz (2006) investigated the influence of atmospheric cues on the emotional responses and behaviours of museum visitors. Her study showed different outcomes in social behaviour between different types of visitors. For example, "respondents high on social approval were significantly more interested in the social content of exhibition, whereas visitors low on social approval specifically came to the exhibition for its subject content" (Kottasz, 2006, p. 109).

The identity-related profiles that are applicable to this study are the Explorers, Facilitators,

Professionals / Hobbyists, Affinity seekers, and Rechargers. Visitors who fit one of these five profiles visit the museum with a purpose in mind; they want to learn something or teach something to others, appreciate a specific object or purpose of the museum, or enjoy the atmosphere for instance. Visitors belonging to the categories Experience seekers and Respectful pilgrims visit the museum out of a sense of obligation, and to have 'been there and done that'. So, they do not have the intention to revisit.

## 2.4 Creating a conceptual model

The museum experience models of Kotler et al. (2008) and Falk and Dierking (1992), and the additional servicescape model of Rosenbaum and Massiah (2011) have similarities and are complementary. These models together provide an overview of the museum experience.

The physical aspects of the museum experience are included in the conceptual model as the *physical dimension*. Wayfinding is dealt with extensively in this study.

The main social aspects of the museum experience are the hospitality and helpfulness of employees and the social density of the environment. These aspects are included in the conceptual model as the *social dimension*. Since museums often adhere to a specific theme for their exhibitions and collections, the *socially-symbolic dimension* is included in the conceptual model. It is interesting to measure if visitors feel 'at home' if the museum provides a familiar cultural and historical surrounding.

Visitors can experience these dimensions differently since visitors have their own needs. In order to measure the visitor motivations, the five identity-related profiles of Falk (2011) are applied to this study and are included in the conceptual model as a moderator.

As multiple studies (Bitner, 1992; Forrest, 2013; Geissler, Rucks, & Edison, 2006; Kottasz, 2006; Rosenbaum, & Massiah, 2011) suggest an influence of the museum experience on brand image, and show that a positive museum experience affects visitors' loyalty, brand image and loyalty are included in the conceptual model.

This study investigates the effect of the museum experience on brand image and loyalty. Furthermore, the differences between males and females, participants with a positive and negative visitor experience, and the identity-related profiles Explorers and Facilitators are investigated. Two studies were performed to measure the difference between parents visiting the museum on their own (Study 1) versus as a family (Study 2). Figure 4 shows the conceptual model of this study.

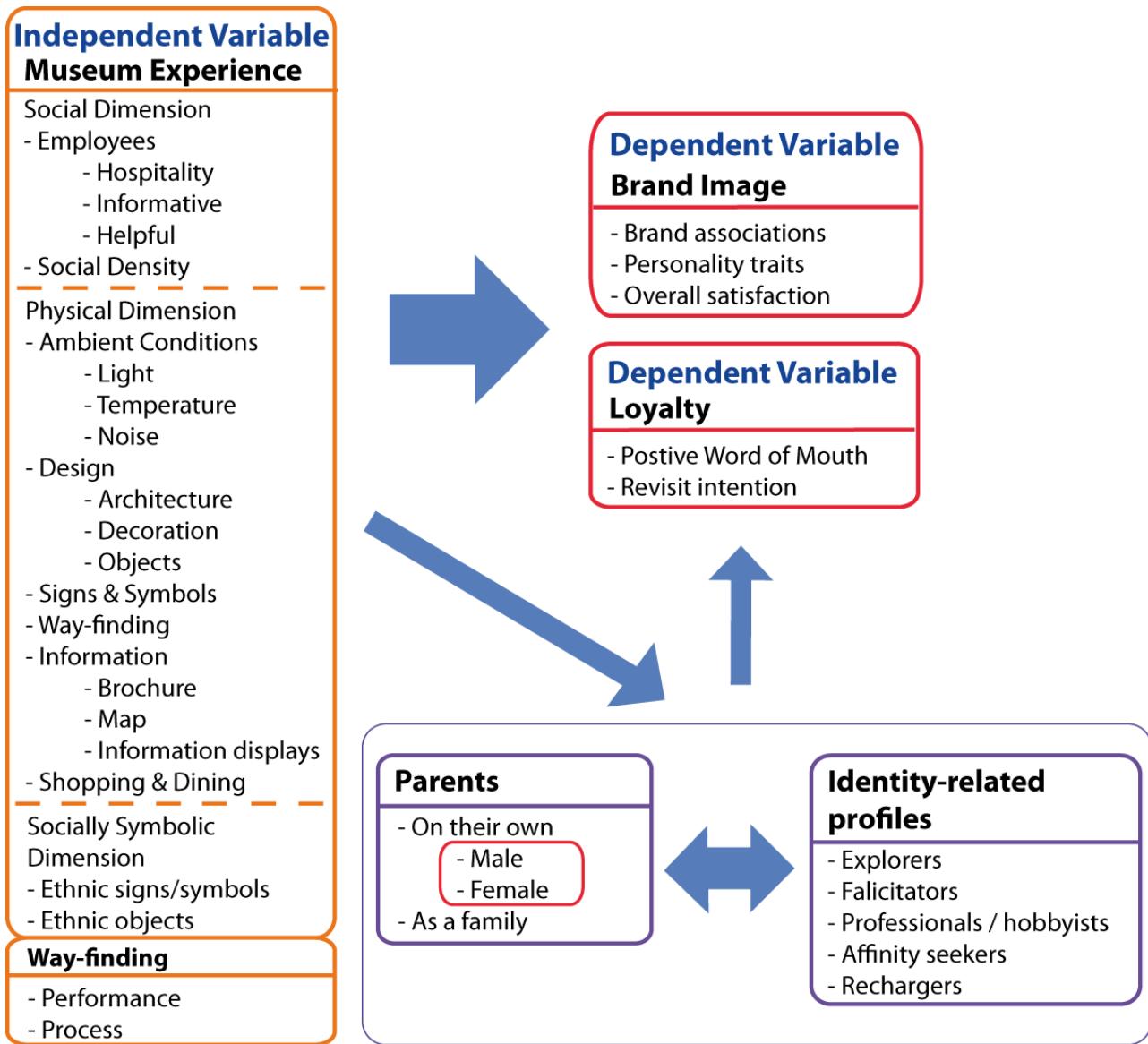


Figure 4. Conceptual model containing the dimensions of museum experience influencing brand image and loyalty, and the role of males and females, participants with a positive and negative visitor experience, the identity-related profiles, and parents visiting the museum on their own versus as a family.

### **3 Methods Study 1**

To investigate the effect of the museum experience on brand image and loyalty, and the differences between males and females, participants with a positive and negative visitor experience, and the identity-related profiles, two studies were performed. Study 1 focused on parents visiting the museum on their own.

#### **3.1 Procedure**

Participation took place between December 2015 and February 2016, from Tuesday until Sunday during the museum's opening hours. Special museum events and holidays such as Christmas were avoided, to ascertain that the museum's ambiance would be approximately the same for all participants, without unusual distractions such as holiday decorations or activities during events. There were a few criteria for participating in this study. The first criterium was that the participants never visited museum TwentseWelle before. In this way, the wayfinding task is performed with no prior knowledge, and the brand image is not based on previous experiences in the museum.

The collection of museum TwentseWelle consists of objects originating from Twente and shows the culture and history of this region. Therefore, the second criterium was that participants live in the Twente region, in order to measure the socially-symbolic dimension.

The third criterium was that the children of participating parents are between the six and twelve years old. When visiting the museum with their children, parents need to keep an eye on their children and therefore have to divide their attention between their children and the exhibition. This may influence their museum experience.

Multiple measurements were used in this study; participants performed a wayfinding task within the museum, participated in an in-depth-interview, and filled out a questionnaire. Participants were given thirty minutes to complete the wayfinding task; they had to find four museum objects. After thirty minutes, they were to go to the museum restaurant, regardless whether they found all four objects or not. If the participant did find all four objects within thirty minutes, they could spend any remaining time in the museum, and proceed to the museum restaurant after thirty minutes. To find the museum objects, participants could use any form of aid. The researcher, however, did not mention which aids participants could use, to prevent giving away navigational clues. At the museum restaurant, the in-depth-interview was held in order to assess the wayfinding task. Finally, participants filled out the questionnaire about the museum experience, brand image (free association technique and brand personality traits), and loyalty. Table 1 shows an overview of the research tasks.

**Table 1***Overview of the research tasks*

Start of the research (location: entrance)	*Brand association task is performed *The way-finding task is explained *The GoPro Hero 4 action camera is attached to the participants' head
Way-finding task (location: permanent exhibition)	*Participant enters the permanent exhibition <i>The Big Story</i> *Start way-finding task
In-depth-interview (location: museum restaurant)	*In-depth-interview about the way-finding task
Questionnaire (location: museum restaurant)	*Questionnaire is filled out
End of the research (location: museum restaurant)	*Participant receives a free family ticket as a gift

Museum employees were informed that the research took place at the museum and some visitors were equipped with a GoPro camera in regard to the research. To ensure that employees did not behave differently, they were not aware of the details of the study. The counter clerks were also not aware of the details of the study. However, they were instructed to give participants a free entrance ticket and to direct them to the entrance of the permanent exhibition.

### 3.2 Instruments

In order to conduct this research, multiple measuring instruments were used. Table 2 shows which measuring instrument measures which variable.

**Table 2***Measuring instruments of variables*

Variable	Measuring instrument
Way-finding	Wayfinding task, in-depth-interview
Museum experience	Questionnaire
Brand Image	Questionnaire: free association technique, brand personality traits
Loyalty	Questionnaire
Identity-related profiles (moderator)	Questionnaire

#### 3.2.1 Wayfinding task

The four museum objects the participants had to find were *Het Lös Hoes* (old farmhouse), *Diorama de Versnelling* ('digital' diorama the Acceleration), *Stoommachine de Agneta* (steam engine the Agneta), and *De Taalkamer* (the Language room). These particular objects were selected to provide different levels of difficulty in wayfinding. For instance, the old farmhouse is a large and striking object, located in plain sight, in the middle of the room; the Language room on the other hand, is tucked away in a corner at the end of the exhibition.

The head-mounted GoPro Hero 4 action camera recorded the participants' behaviour to see which aids they used and which routes they took to find the objects.

By means of the wayfinding task, the wayfinding performance and wayfinding process were

measured. Wayfinding performance consists of the routes taken to get to the object, the distance travelled to get to the object, and the time travelled to get to the object. These measurements were derived from studies of Li and Klippel (2014), Theunissen (2015), and Chebat et al. (2007). The wayfinding process consists of the level of difficulty, whether or not aids were used to find the object, and what type of aids were used to find the object. Kozlowski and Bryant (1977), and Theunissen (2015) used these measurements in their studies.

### 3.2.2 Post wayfinding task in-depth interview

The in-depth interview took place at the museum restaurant *bijRozendaal*, after a participant had performed the wayfinding task. With regard to the wayfinding task, the following questions were asked:

**Table 3**  
*Questions of the in-depth-interview*

- 
- Did you find the object?
  - If yes, how did you find the object?
  - Was it easy to find?
  - Did you experience any difficulties?
  - What aids did you use to find the object?
  - Can you provide me with some information about the object?
  - How did you find this information?
  - Did you experience insufficient aids during your visit?
  - Do you have other comments?
- 

Each of these questions was asked for each object respectively. All questions are included in Appendix A. These questions were asked to double-check if participants consciously found the objects; the video sometimes suggests that the participant found the object, whereas the in-depth-interview showed that they did not actually notice the object, or vice versa. Therefore, the in-depth-interview is a measuring instrument for the wayfinding performance and wayfinding process.

### 3.2.3 Post wayfinding task questionnaire

A questionnaire was used to measure the museum experience, brand image, loyalty, and identity-related profiles. The questionnaire was created with the online survey tool Qualtrics; the questions are included in Appendix B.

#### *Museum Experience and Loyalty*

Three dimensions of the museum experience are: the physical dimension, the social dimension, and the socially-symbolic dimension. The physical dimension consists of six aspects: ambient

conditions, design, signs, wayfinding, information, and shopping and dining. The social dimension consists of two aspects: social density, and employees. The socially-symbolic dimension was measured as one aspect. One or more statements were used to measure these aspects. This also accounts to loyalty. Participants could indicate on a five-point Likert scale to what extent they agreed with the statements (1 = strongly disagree, 5 = strongly agree).

#### *Brand image*

To measure brand image, the free association technique and brand personality traits were applied. The free association technique was employed before the participants started the wayfinding task and afterwards (in the questionnaire). Participants were asked to write down all words and terms they associate with museum TwentseWelle. The difference between the associations before and after the wayfinding task is measured and shows how the museum experience influences brand image. The questionnaire also contained a question with regard to brand personality traits. The personality traits applied in this study were derived from the personality traits of Aaker (1997), and supplemented with personality traits selected in co-operation with the museum board. In total, 21 brand personality traits were used. These traits were compiled on the base of the museum experience aspects.

#### *Identity-related profiles*

The five identity-related profiles *Explorers*, *Facilitators*, *Rechargers*, *Professionals / Hobbyists*, and *Affinity seekers*, were defined in the questionnaire. Of each profile, keywords such as *curious*, *children*, and *relaxing* were set bold to clarify the profile and make it easier and quicker to read. Participants were asked to indicate with which profile they identify themselves.

### **3.3 Participants**

Participants were recruited via elementary schools and via posts in Facebook groups. In total, 24 schools were approached to post a message in their newsletter directed to parents, asking them to participate in this study. Nine schools actually posted a message in their newsletter. Fifty-one parents responded to these messages. However, only 33 of them made an appointment and actually kept their appointment. The other 18 parents did not respond after first contact or did set an appointment but never showed up.

The demographic profile of the participants is shown in Table 4.

**Table 4**  
Demographic profile of the participants  
(N=33)

		N	%
Gender			
	Male	9	27.3
	Female	24	72.7
Age			
	< 30	0	0.0
	30 - 34	7	21.2
	35 - 39	12	36.4
	40 - 44	8	24.2
	45 - 49	4	12.1
	50 - 54	1	3.0
	55 years or older	1	3.0
Level of education*			
	Low	0	0.0
	Middle	16	48.5
	High	17	51.5

\*Note: the level of education is covered by the following type of educations. Lower education: elementary school, high school. Middle education: Dutch MBO. Higher education: bachelor of university of applied sciences (Dutch HBO), bachelor of university, master or doctorate degree.

### Groups of participants

In Study 1, a comparison between groups of participants is made. These groups are: *gender*, *visitor experience*, and *identity-related profiles*.

#### *Gender*

Nine males and twenty-four females participated in this study. In the questionnaire, participants had to indicate their gender. With the aid of these data, an attempt was made to measure the difference between male and female participants in wayfinding. Research (Chebat et al., 2004; Chebat et al., 2007; Chen et al., 2008) has shown significant differences between the wayfinding approach of males and females. Therefore, this is applied in Study 1.

#### *Visitor experience*

Table 5 shows the mean score, the median score, and the standard deviation on the museum experience by participants. Overall, participants were positive in their opinion about the museum experience ( $M = 3.68$ ,  $SD = .35$ ). In order to create two groups of visitors with different scores on museum experience, the median score ( $Med = 3.66$ ) was used as criterion. Participants who scored above the median were assigned to the group of positive participants ( $N = 16$ ), and participants who scored below the median were assigned to the group of negative participants ( $N = 17$ ). By creating these two groups, an attempt is made to measure the effect of positive versus negative participants on wayfinding, brand image, and loyalty.

**Table 5**  
Scores on the Museum Experience

Mean	Median	SD
3.68	3.66	.35

### *Identity-related profiles*

As shown in Figure 5, none of the participants had chosen the profile *Rechargers*, one participant had chosen the profile *Professionals / Hobbyists*, and three of the participants had chosen the profile *Affinity seekers*. The profile *Explorers* was chosen by thirteen participants and the profile *Facilitators* was chosen by sixteen participants. Therefore, these two profiles are compared to one another in this study. Since these profiles are based on visitor motivations, it is interesting to measure if these two profiles score differently on wayfinding, brand image, and loyalty.

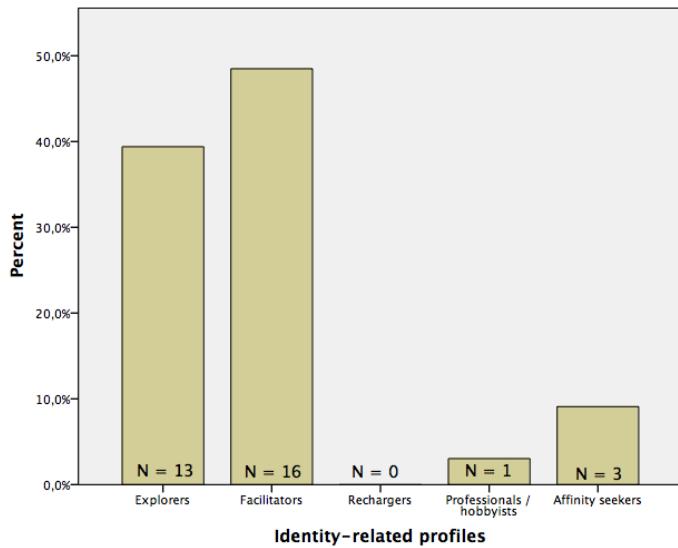


Figure 5. Results: identity-related profiles of participants

## 3.4 Analysis

### 3.4.1 Wayfinding task

#### *Wayfinding performance*

In order to analyse the wayfinding performance, it was measured whether or not participants found the objects, and how many time they spent and distance they travelled to find the objects.

To map the participants' *travelled routes to find the objects*, twenty-eight heatmaps were created. Li and Klippel (2014) used this technique to map the routes taken by participants to find a specific book in the library, and to show which routes were taken most often.

Four different colours were used to indicate the activity:

- Green indicates a low activity (7 or less participants had walked here);
- Yellow indicates a medium activity (between the 8 and 12 participants had walked here);
- Orange indicates a medium activity (between the 13 and 19 participants had walked here);
- Red indicates a high activity (more than 20 participants had walked here).

The *time travelled* to find the objects was measured using the videos recorded with the GoPro Action 4 camera. The measured time travelled also includes time participants spent on aids to find the objects such as asking an employee for help or watching a video to obtain some information. This may result in a difference in travelled time and distance to find the object.

The distance travelled to find the objects was measured by using a grid-lined map (one square represents one meter). On this map, all routes participants had taken to find the objects were drawn with the aid of Adobe Illustrator. To analyse travelled time and distance data, all measured values were entered in an SPSS (statistical programme) file.

#### *Wayfinding process*

The in-depth-interview was used to measure the *level of difficulty* of objects, *aids used* to find the objects, and what *types of aids* participants used to find the objects. In SPSS, the scales *level of difficulty*, *aids used*, and *type of aids used* were created per object. The labels *easy* and *hard* were used to indicate the level of difficulty, and the labels *yes* and *no* were used to indicate whether or not aids were used. In the results section, the *wayfinding process* results are shown.

#### 3.4.2 Post wayfinding task questionnaire

With regard to the questionnaire, the museum experience, brand image, and loyalty were measured. Scales of the dimensions of museum experience and loyalty were created with the aid of SPSS in order to measure the effect of the museum experience on loyalty. Below, the scales are discussed and reliability is tested by means of the Cronbach's alpha. Analysis of the free association technique and brand personality traits are also explained.

#### *Physical dimension*

- Three items were used to measure the experience of *ambient conditions*. These items include light, temperature, and noise. The items used in this study were: “The lightning in the museum is good”, “The temperature in the museum is too high.” (this item was recoded), “There is too much noise in the museum.” (this item was recoded).
- Experience of *design* was measured by two items. These items refer to architecture, decoration, and objects. An example of an item used in the study is: “The architecture of the building fits the appearance of TwentseWelle.”. The scale of the items of design was found reliable ( $\alpha = .74$ ) and is a useful scale to this study.
- Use of *signs* was measured by one item. The item used in the study is: “I have used the signage in

the museum.”.

- Besides the wayfinding task, five items were included in the questionnaire to measure the *wayfinding* experience. Example of items used in the study are: “From the parking lot, I could find the entrance of TwentseWelle easily.”, “It was clear to me what route I could follow in the museum.”, “The brochures were easy to find”.
- Experience of *information* supply was measured by two items. These items include the information displays. An example of an item used in the study is: “The information displays about the museum objects were too limited.” (recoded item). The scale of the items of information was found reliable ( $\alpha = .71$ ) and is a useful scale to this study.
- Finally, two items were used to measure the experience of *shopping and dining*. These items include the museum shop and museum restaurant. An example of an item used in the study is: “The shop is an added value to my visit.”. The scale of the items of shopping and dining was found reliable ( $\alpha = .79$ ) and is a useful scale to this study.

#### *Social dimension*

- Two items were used to measure the experience of *social density*. An example of an item used in the study is: “The environment was too crowded.” (recoded item) ( $\alpha = .61$ ).
- The items hospitality-, informativeness-, and helpfulness of *employees* were included. An example of an item used in the study is: “The employees of TwentseWelle were helpful.”. The scale was found reliable ( $\alpha = .75$ ).

#### *Socially-symbolic dimension*

To measure the *socially-symbolic dimension*, six items were used. An example of an item used in the study is: “I felt at home at TwentseWelle.”. The scale of the items of the socially-symbolic dimension was found reliable ( $\alpha = .80$ ) and is a useful scale to this study.

#### *Loyalty*

The questionnaire contained three statements with regard to *loyalty*. An example of an item used in the study is “I would recommend TwentseWelle to others.”. The scale of the items of loyalty was found reliable ( $\alpha = .93$ ) and is a useful scale to this study.

#### *Free association technique*

All words collected with the aid of the free association technique were divided into sub-scales such as: family, history, animals, dialect / language, and learning experience. These sub-scales (both sub-

scales before and after the museum visit) were entered in SPSS for each participant. In the results section, the free association of participants before and after the museum visit, are compared.

*Brand personality traits*

The personality traits were included in the questionnaire as a multiple choice question. Participants were asked to select one or more personality traits they associated with museum TwentseWelle. With the aid of SPSS, the answers were analysed.

## **4 Results Study 1**

In this section, the results of Study 1 are discussed. These results provide an answer to the research question:

*How does the museum experience affect visitors' brand image and loyalty? Do these variables show differences between males and females, participants with a positive and negative visitor experience, the identity-related profiles, and parents versus families?*

The museum experience was measured through different museum aspects. Wayfinding was dealt with extensively in this study and was both measured through items in the questionnaire and as a wayfinding task. The wayfinding task was performed to measure the wayfinding performance and process of museum visitors, and in specific to measure the difference between males and females, positive and negative participants, and Explorers and Facilitators.

Through the wayfinding task, participants visited the museum and experienced the museum environment. In this way, the effect of the museum experience (the museum visit) on brand image and loyalty was measured. The free association task and the brand personality traits show how the museum experience derived from the museum visit effects the brand image.

The effect of the museum experience on loyalty was measured by conducting a regression analysis. This effect was also measured through visitors with a positive or negative museum experience by conducting an independent samples T-test.

### **4.1 Wayfinding**

As the literature shows, wayfinding is an important aspect of the museum experience. The wayfinding performance consists of *finding the object, travelled routes to find the objects, travelled time, and travelled distance*. The wayfinding process consists of *the level of difficulty, aids used, and type of aids used*. These items do not measure the effects between the independent and dependent variables, but were applied in this study to analyse the wayfinding of museum visitors. Below, the results are shown.

#### **4.1.1 Finding the object**

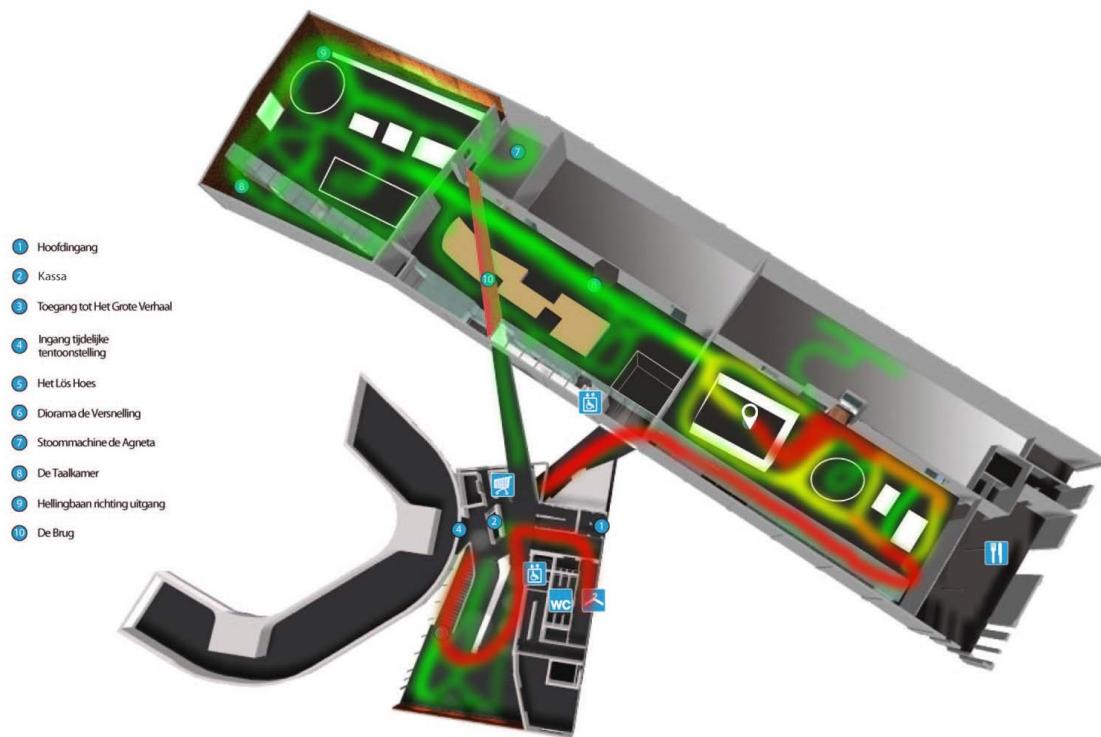
As can be seen in Table 6, the objects were found by most of the participants, although the language room (Object 4) was not found by 7 (21.2%) participants. Table 6 also shows that there were no significant differences between male and female participants in finding their way to the objects. The same goes for positive and negative participants and Explorers and Facilitators.

**Table 6**  
Number of participants that found the objects

		N	Object 1 %	P value X2	N	Object 2 %	P value X2	N	Object 3 %	P value X2	N	Object 4 %	P value X2
Total		33	100	-	31	94	-	32	97	-	26	79	-
Gender	Male	9	100	1.0	8	89	.46	8	89	.10	7	78	.93
	Female	24	100		23	96		24	100		19	79	
Visitor Experience	Positive	16	100	1.0	15	94	.52	16	100	.33	13	81	.74
	Negative	17	100		16	94		16	94		13	77	
Identity-related profiles	Explorers	13	100	1.0	13	100	.97	12	92	.66	12	92	.14
	Facilitators	16	100		14	88		16	100		12	75	

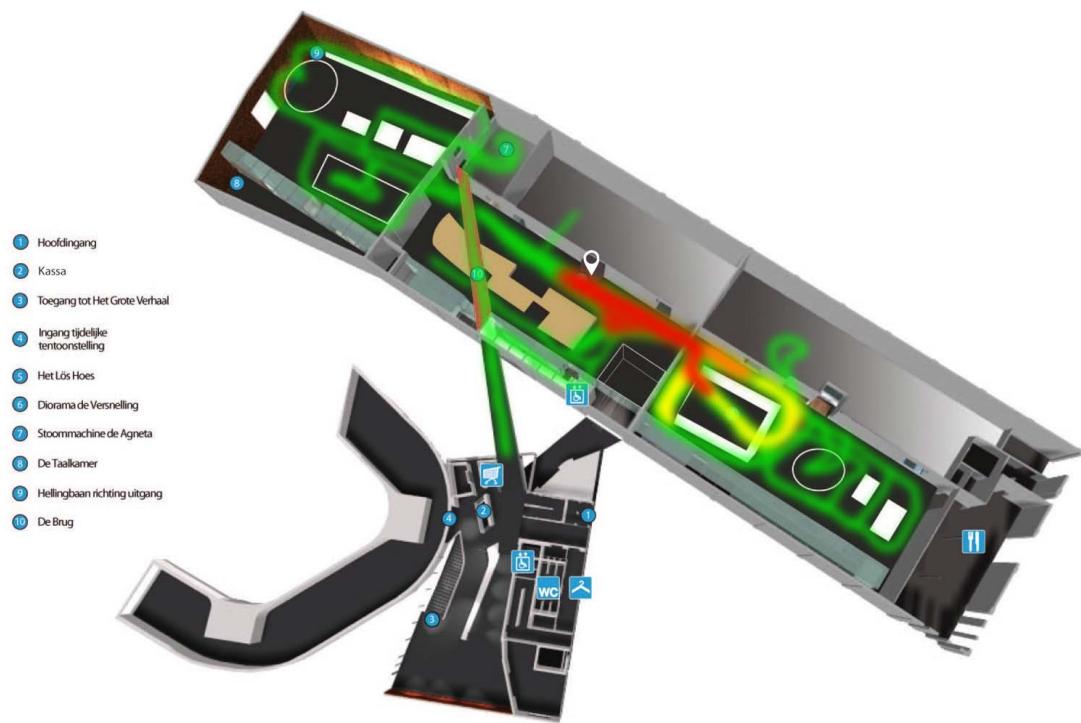
#### 4.1.2 travelled routes

Figure 6, Figure 7, Figure 8, and Figure 9 show the heatmaps of the total group of participants of each object. As can be seen in Figure 6, most participants proceeded directly to the entrance of the permanent exhibition. From there, participants spread out through the first part of the museum and found Object 1. Most participants took the direct route to Object 2 (Figure 7). Figure 8 shows a similar visualization concerning Object 3. The last heatmap (Figure 9) shows a different visualization. Thirteen to nineteen participants went to the second floor. Some of them ( $N = 7$ ) mistook the object on the second floor, the *living room*, for the *language room* and ended their wayfinding task there. The other 26 participants did find the *language room*.



**TwentseWelle**

Figure 6. Heatmap wayfinding task 1



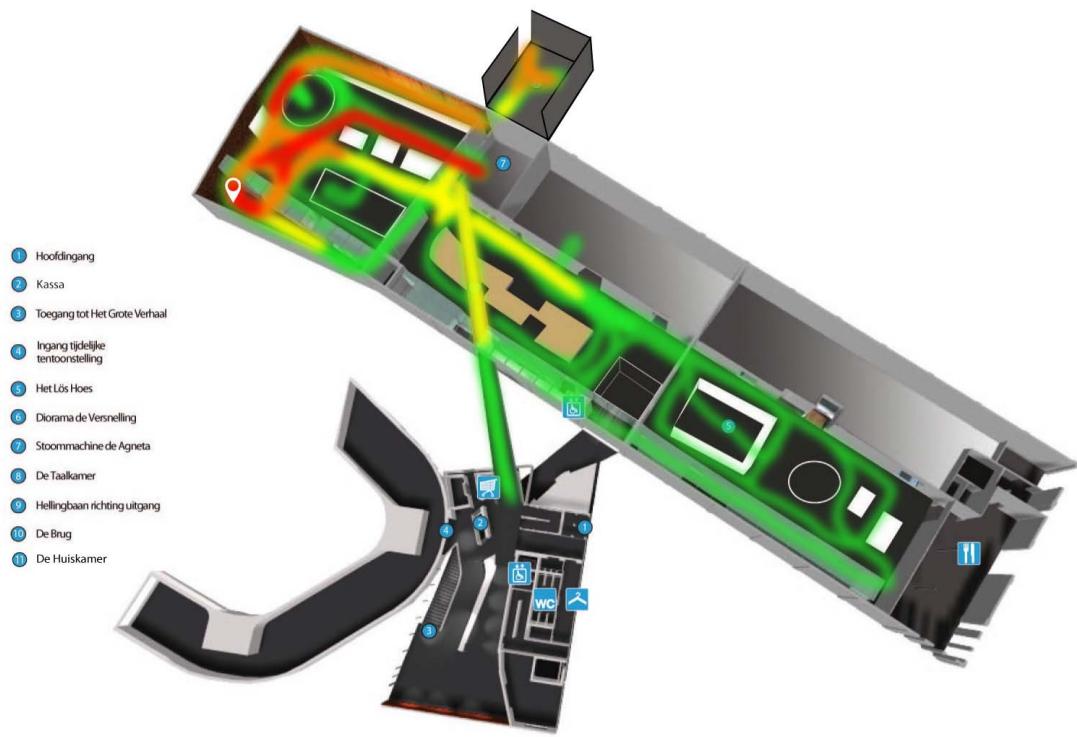
## TwentseWelle

Figure 7. Heatmap wayfinding task 2



## TwentseWelle

Figure 8. Heatmap wayfinding task 3



## TwentseWelle

Figure 9. Heatmap wayfinding task 4

The heatmaps of the comparing groups of participants are included in Appendix C.

### 4.1.3 Travelled time

The mean time travelled to get to the object by the participants is shown in Table 8. An independent samples T-test was performed to compare if there is a significant difference between the total time travelled to get to the objects by male and female participants, by positive and negative participants, and by Explorers and Facilitators. As can be seen in Table 8, females travelled significantly less time in total to get to the objects than males ( $t(23) = 4.172, p < .01$ ). The other groups did not show significant differences.

**Table 8**  
*Total time travelled by participants to find the objects in minutes*

		M	SD	P value T-test
Total		15	5.6	-
Gender	Male	21	4.6	.00
	Female	13	4.2	
Visitor Experience	Positive	13	5.4	.16
	Negative	16	5.5	
Identity-related profiles	Explorers	15	6.7	.65
	Facilitators	14	4.9	

#### 4.1.4 Travelled distance

The mean distance travelled to get to the object by the participants is shown in Table 7. An independent samples T-test was performed to compare if there is a significant difference between the total distance travelled to get to the objects by male and female participants, by positive and negative participants, and by Explorers and Facilitators. As can be seen in Table 7, females travelled significantly less distance to get to the objects than males ( $t(5.993) = 2.591, p < .05$ ). The other groups did not show significant differences.

**Table 7**  
*Total distance travelled by participants to find the objects in meters*

		M	SD	P value T-test
Total		613	254.7	-
Gender	Male	875	311.2	.04
	Female	530	171.8	
Visitor Experience	Positive	543	190.1	.19
	Negative	677	295.4	
Identity-related profiles	Explorers	659	337.2	.40
	Facilitators	560	146.4	

#### 4.1.5 Level of difficulty

A one-way repeated measures analysis of variance (ANOVA) was used to compare the participants' ratings on the level of difficulty of the four objects. The ANOVA results indicated a significant effect on level of difficulty,  $F(3, 30) = 8.65, p < .001$ , partial  $\eta^2 = .46$ . Pairwise comparisons further revealed that Object 4 ( $M = 1.67, SD = .48$ ) was significantly 'harder to find' than Object 1 ( $M = 1.18, SD = .39$ ) ( $p < .001$ ), Object 2 ( $M = 1.15, SD = .36$ ) ( $p < .001$ ), and Object 3 ( $M = 1.30, SD = .47$ ) ( $p < .05$ ).

An independent samples T-test was performed to compare if there is a significant difference between the level of difficulty of male and female participants, of positive and negative participants, and of Explorers and Facilitators. As can be seen in Table 9, no significant differences were found between the groups of participants.

**Table 9**  
*Level of difficulty of way-finding task*

		Object 1			Object 2			Object 3			Object 4		
		M	SD	P value T-test									
Total		1.2	0.4	-	1.2	0.4	-	1.3	0.5	-	1.7	0.5	-
Gender	Male	1.2	0.4	.72	1.2	0.4	.50	1.4	0.5	.29	1.8	0.4	.42
	Female	1.2	0.4		1.1	0.3		1.3	0.4		1.6	0.5	
Visitor Experience	Positive	1.1	0.3	.43	1.1	0.3	.69	1.3	0.5	.54	1.8	0.4	.09
	Negative	1.2	0.4		1.2	0.4		1.4	0.5		1.5	0.5	
Identity-related profiles	Explorers	1.2	0.4	.82	1.1	0.3	.41	1.3	0.5	.72	1.6	0.5	.45
	Facilitators	1.2	0.4		1.2	0.4		1.4	0.5		1.8	0.5	

\*Note. The level of difficulty ranges from 1 (easy) to 2 (hard).

#### 4.1.6 Use of aids to find the objects

A one-way repeated measures analysis of variance (ANOVA) was used to compare the use of aids to find the four objects. The ANOVA results indicated a significant effect on the use of aids,  $F(3, 30) = 11.77, p < .001$ , partial  $\eta^2 = .54$ . Pairwise comparisons further revealed that the use of aids to find Object 1 ( $M = 1.27, SD = .45$ ) is significantly higher than for Object 2 ( $M = 1.82, SD = .39$ ) ( $p < .001$ ), and Object 4 ( $M = 1.64, SD = .49$ ) ( $p < .05$ ). Finally, the use of aids to find Object 3 ( $M = 1.21, SD = .42$ ) is significantly higher than for Object 2 ( $p < .001$ ), and Object 4 ( $p < .01$ ).

An independent samples T-test was performed to compare if there is a significant difference between the level of aids used to find the objects by male and female participants, by positive and negative participants, and by Explorers and Facilitators. As can be seen in Table 10, no significant differences were found between the groups of participants.

**Table 10**  
*Number of participants that used an aid to find the objects*

		Object 1			Object 2			Object 3			Object 4		
		M	SD	P value T-test									
Total		1.3	0.5	-	1.8	0.4	-	1.2	0.4	-	1.6	0.5	-
Gender	Male	1.1	0.3	.15	1.9	0.3	.53	1.1	0.3	.40	1.6	0.5	.57
	Female	1.3	0.5		1.8	0.4		1.3	0.4		1.7	0.5	
Visitor Experience	Positive	1.3	0.5	.63	1.9	0.3	.09	1.3	0.5	.62	1.7	0.5	.57
	Negative	1.2	0.4		1.7	0.5		1.2	0.4		1.6	0.5	
Identity-related profiles	Explorers	1.2	0.4	.19	1.9	0.4	.83	1.2	0.4	.78	1.6	0.5	.78
	Facilitators	1.4	0.5		1.9	0.3		1.2	0.4		1.6	0.5	

\*Note. The use of aids ranges from 1 (aids used) to 2 (no aids used).

#### 4.1.7 Type of aids used to find the objects

Table 11, Table 12, Table 13, and Table 14 show the type of aids participants used to find the objects. As can be seen in Table 11, most of the participants asked an employee for help (27.3%), used the projection (27.3%), or used no aids (27.3%) to find Object 1. With the aid of the projection, the name was made visible on the object. The display inside the *Lös Hoes* also referred to the name. However, some participants indicated that they were unable to find the name. Participants also indicated that they assumed to have found Object 1 by means of recognition and knowledge. Table 12 shows that most of the participants (81.8%) did not use an aid to find Object 2, however they recognised the object by means of the name which was depicted on the object. As can be seen in Table 13, 19 of the 33 participants (57.6%) used the aid display to find Object 3. The information gathered from the display referred to the object by means of name and image. Finally, most of the participants did not use an aid to find Object 4 (63.6%), or asked an employee for help to find Object 4 (21.2%). The object was not provided with a name, nor the displays referred to it.

**Table 11**  
*Type of aids used to find Object 1*

		Employee N	Employee %	Display N	Display %	Projection N	Projection %	Smartphone N	Smartphone %	Signage N	Signage %	None N	None %
Total		9	27	4	12	9	27	1	3	1	3	9	27
Gender	Male	2	22	1	11	4	44	0	0	1	11	1	11
	Female	7	29	3	13	5	21	1	4	0	0	8	33
Visitor Experience	Positive	4	25	3	19	3	19	1	6	0	0	5	31
	Negative	5	29	1	6	6	35	0	0	1	6	4	24
Identity-related profiles	Explorers	4	31	2	15	4	31	0	0	1	8	2	15
	Facilitators	4	25	1	6	4	25	1	6	0	0	6	38

**Table 12**  
*Type of aids used to find Object 2*

		Employee N	Employee %	Smartphone N	Smartphone %	None N	None %
Total		5	15	1	3	27	82
Gender	Male	1	11	0	0	8	89
	Female	4	17	1	4	19	79
Visitor Experience	Positive	0	0	1	6	15	94
	Negative	5	29	0	0	12	71
Identity-related profiles	Explorers	1	8	1	8	11	85
	Facilitators	2	13	0	0	14	88

**Table 13**  
*Type of aids used to find Object 3*

		Employee N	Employee %	Display N	Display %	Smartphone N	Smartphone %	Signage N	Signage %	None N	None %
Total		5	15	19	58	1	3	1	3	7	21
Gender	Male	0	0	8	89	0	0	0	0	1	11
	Female	5	21	11	46	1	4	1	4	6	25
Visitor Experience	Positive	2	13	9	56	1	6	0	0	4	25
	Negative	3	18	10	59	0	0	1	6	3	18
Identity-related profiles	Explorers	0	0	9	69	1	8	0	0	3	23
	Facilitators	5	31	8	50	0	0	0	0	3	19

**Table 14**  
*Type of aids used to find Object 4*

		Employee N	Employee %	Smartphone N	Smartphone %	Arrow N	Arrow %	Visitor N	Visitor %	None N	None %
Total		7	21	2	6	2	6	1	3	21	64
Gender	Male	2	22	1	11	1	11	0	0	5	56
	Female	5	21	1	4	1	4	1	4	16	67
Visitor Experience	Positive	3	19	1	6	1	6	0	0	11	69
	Negative	4	24	1	6	1	6	1	6	10	59
Identity-related profiles	Explorers	2	15	2	15	1	8	0	0	8	62
	Facilitators	5	31	0	0	1	6	1	6	9	56

### Conclusion total score

Overall, the wayfinding tasks were successfully performed by most of the participants. Object 4 was found by the least participants as compared to the other three objects, and was significantly 'harder to find'. The heatmaps support these findings and show that some participants ended wayfinding task 4 in the *living room* instead of the *language room*. Also, participants significantly used more aids to find Object 1 and Object 3 as compared to Object 2 and Object 4.

### Conclusion group scores

The wayfinding results of different groups of participants were shown and compared in this section. As the results show, females completed the wayfinding tasks in a significantly shorter time and distance than males. The heatmaps (Appendix C) support these findings, and show that most females took the logical route and explore new parts of the museum to get to the objects. Males however, spread out through the museum and revisit parts of the museum they explored earlier. No differences were found between positive and negative participants, and Explorers and Facilitators.

It appears that participants successfully found their way in the museum. As fast and efficient wayfinding can contribute to a person's satisfaction and opinion of an environment, wayfinding - as part of the museum experience - might have influenced the brand image positively. In the next paragraph, the brand image results are discussed.

## 4.2 Brand Image

The *free association technique*, and *personality traits* were applied to measure the influence of the museum experience on brand image. Below, the results are shown.

### 4.2.1 Free association technique

The free association technique was performed before and after the wayfinding task. The results of the total group of participants are shown in Figure 10 and Figure 11.

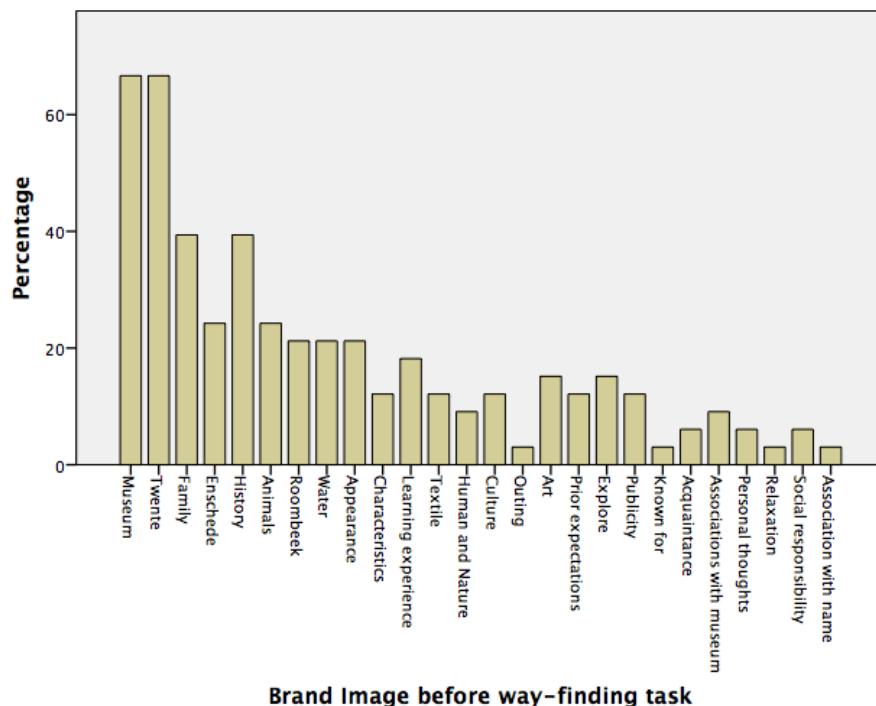


Figure 10. Free association technique: brand image before wayfinding task

As can be seen in Figure 10, the words mentioned before participants performed the wayfinding task were more general such as *museum*, *culture*, and *art*. The region was also mentioned; *Twente*, *Enschede*, and *Roombeek*. *Associations with the museum*, and *prior expectations* were mentioned; specifically, words such as *family*, *history*, *animals*, *learning experience*, *textile*, and *explore*. Finally, some participants wrote down some associations they had with the name *TwentseWelle*. The most common word was *water*. In the “*Twentse dialect*”, *welle* means source or well.

Participants might have linked the word Welle to water.

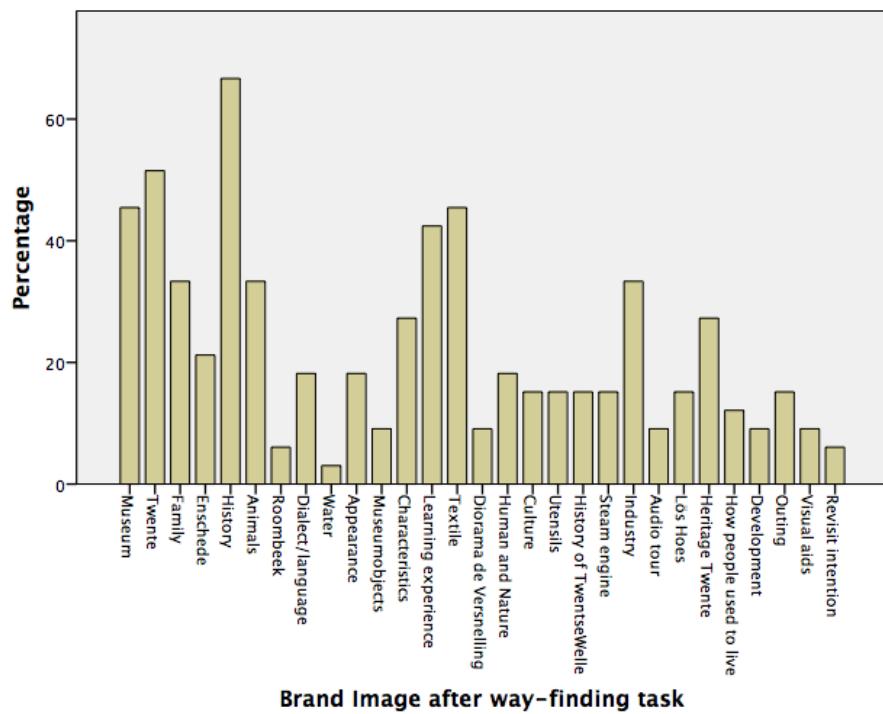


Figure 11. Free association technique: brand image after wayfinding task

After the wayfinding task (Figure 11), words such as *Twente*, *family*, and *history* remain present. Words concerning the content of the exhibition such as *museum objects*, *textile*, *industry*, and *heritage of Twente* were mentioned. Also, words concerning the four objects of the wayfinding task such as *dialect / language*, *diorama the Acceleration*, *steam engine*, and *the old farmhouse* were mentioned.

#### Visitor Experience

The free association results of positive and negative participants are shown in Table 18 and Table 19 (Appendix D). As Table 18 shows, the words *Twente* (68.8%), *museum* (56.3%), and *history* (50%) were often mentioned by positive participants before the wayfinding task. As for negative participants, *museum* (76.5%), and *Twente* (64.7%) were often mentioned before the wayfinding task.

As Table 19 shows the words *Twente* (62.5%), and *history* (56.3%) were often mentioned by positive participants after the wayfinding task. As for negative participants, the words *history* (76.5%), *textile* (58.8%), and *museum* (52.9%) were often mentioned after the wayfinding task.

### *Identity-related profiles*

The free association technique results of Explorers and Facilitators are shown in Table 20 and Table 21 (Appendix D). As can be seen in Table 20, the words *Twente* (69.2%), *museum* (53.8%), and *family* (53.8%) were often mentioned by Explorers before the wayfinding task. As for Facilitators, the words *museum* (68.8%), and *Twente* (68.8%) were often mentioned before the wayfinding task.

As Table 21 shows, the words *history* (61.5%), *textile* (61.5%), *Twente* (53.8%), and *industry* (46.2%) were often mentioned by Explorers after the wayfinding task. As for Facilitators, the words *Twente* (62.5%), *history* (62.5%), and *learning experience* (56.3%) were often mentioned after the wayfinding task.

#### **Conclusion total score**

The free association technique was applied in this study to measure the difference between brand associations derived before and after participants visited the museum. Before the museum visit, common words related to the region, the content of the museum, and arts and culture were mentioned. After the museum visit, more specific words related to the history of Twente, the content and exhibition of the museum, and the wayfinding task were mentioned.

#### **Conclusion group scores**

No striking differences were found between positive and negative participants, and Explorers and Facilitators, and their free association technique results before and after visiting the museum.

### 4.2.2 Brand personality traits

Figure 12 shows the personality traits results of the total group of participants.

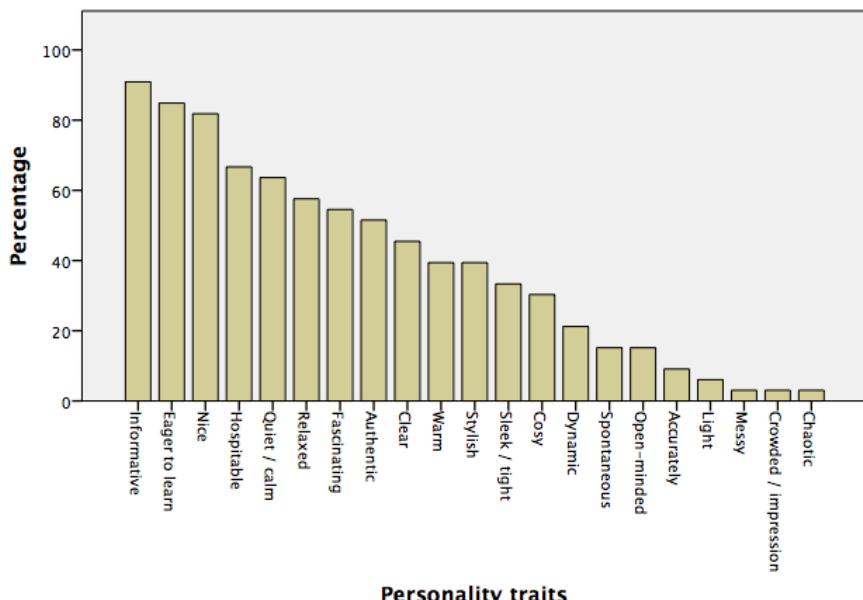


Figure 12. Results: total score of personality traits

As can be seen in Figure 12, the personality traits *informative* (91%), *eager to learn* (85%), *nice* (82%), *hospitable* (67%), *quiet / calm* (64%), *relaxed* (58%), *fascinating* (55%), and *authentic* (52%) are associated with museum TwentseWelle by more than half of the participants. *Messy*, *crowded / impression*, and *chaotic* are associated with museum TwentseWelle, each by one (different) participant. None of the participants associated *boring* with museum TwentseWelle.

### *Visitor experience*

Table 22 (Appendix D) shows that positive participants scored higher on most words than negative participants. Positive participants associated more (different) words with museum TwentseWelle than negative participants. All positive participants associated *informative* with museum TwentseWelle. The negative participants scored higher on the words *messy*, *crowded / impression*, and *chaotic*.

### *Identity-related profiles*

The percentages of words associated with TwentseWelle by Explorers and Facilitators are fairly similar for most words (Table 23, Appendix D). However, there are a few words from which the percentages are different: *relaxed*, *hospitable*, *cosy*, and *nice*. Facilitators scored higher on these words.

#### **Conclusion total score**

As the results of brand personality traits show, more than eighty percent of the participants associated the words *informative*, *eager to learn*, and *nice* with museum TwentseWelle.

#### **Conclusion group scores**

Participants with a positive museum experience associated more (different) words with museum TwentseWelle than participants with a negative museum experience. Furthermore, none of the positive participants associated the words *messy*, *crowded / impression*, and *chaotic* with museum TwentseWelle.

### 4.2.3 Rating museum TwentseWelle

Table 15 shows the mean rate of museum TwentseWelle on a scale from 1 to 10. On average, the participants rated museum TwentseWelle with an 8.1.

**Table 15**

*Rate of museum TwentseWelle on a scale from 1 to 10*

		M	SD	P value T-test
Total		8.1	0.8	-
Visitor Experience	Positive	8.2	0.7	.40
	Negative	7.9	1.0	
Identity-related profiles	Explorers	7.8	0.7	.23
	Facilitators	8.1	0.8	

In this paragraph, results of brand image were shown. The free association task showed a difference in brand image before and after participants visited the museum. The brand personality traits participants associated the most with museum TwentseWelle can be related to the recreational, social, authentic, and learning experiences of the museum visit. Since participants rated TwentseWelle with an 8.1, it appears that participants were positive about the museum visit. The following paragraphs show the results of different aspects of the museum experience and the influence of the museum experience on loyalty.

#### 4.3 Museum experience

The museum experience was measured using the items displayed in the tables below. Table 16, Table 17, and Table 18 show the medium scores and standard deviation of the items of the physical dimension, social dimension, and socially-symbolic dimension. All items are of positive nature.

An independent samples T-test was performed to compare if there is a significant difference between the item scores of the aspects of museum experience by positive and negative participants, and by Explorers and Facilitators. As can be seen in Table 16, a significant difference on *decoration / museum objects* ( $t(26.5) = -2.531$ ,  $p < .05$ ), *logical order exhibition* ( $t(31) = -2.680$ ,  $p < .05$ ), *added value museum shop* ( $t(31) = -2.726$ ,  $p < .05$ ), and *added value museum restaurant* ( $t(31) = -2.154$ ,  $p < .05$ ) of the physical dimension was found between the positive and negative participants.

Table 17 shows a significant difference on *crowding* ( $t(31) = -2.231$ ,  $p < .05$ ) of the social dimension between the positive and negative participants.

Participants with a positive museum experience scored significantly higher on all socially-symbolic items than participants with a negative museum experience (Table 18).

**Table 16**  
*Items of the physical dimension of Museum Experience*

		Total			Positive		Negative		Pos. - Neg.	Explorers	Facilitators	Exp. - Fac.
		N	M	SD	M	SD	M	SD				
Ambient conditions	Light	33	3.2	1.1	3.5	1.2	2.9	0.9	.13	3.1	1.0	3.3
	Temperature	33	3.6	0.9	3.8	0.9	3.5	0.8	.26	3.3	0.9	3.9
	Noise	33	4.2	0.8	4.2	0.9	4.1	0.7	.81	4.4	0.7	3.9
Design	Architecture	33	3.9	0.9	4.2	0.8	3.7	0.9	.08	4.0	0.8	3.7
	Decoration / museumobjects	33	3.9	0.9	4.3	0.6	3.6	1.0	.02	4.0	1.0	3.8
Signs	Signage	33	2.6	1.0	2.8	1.2	2.4	0.8	.27	2.3	1.0	2.8
	Parking lot to entrance	33	3.6	1.1	3.7	1.1	3.5	1.0	.68	3.4	1.0	3.6
Way-finding	Clear routing	33	3.3	1.1	3.6	1.1	3.0	1.0	.13	2.9	1.1	3.4
	Logical order exhibition	33	4.0	0.6	4.3	0.6	3.7	0.6	.01	4.0	0.8	3.9
	Information displays	33	3.2	1.0	3.3	1.0	3.1	1.0	.48	3.1	1.2	3.2
	Brochures	33	2.5	1.1	2.6	1.2	2.4	1.1	.70	2.3	1.0	2.4
Information	Displays added value	33	3.2	1.0	3.4	1.2	2.9	0.8	.17	2.9	1.2	3.3
	Amount of information	33	2.8	1.0	3.1	1.2	2.5	0.8	.10	2.7	1.2	2.8
Shopping & dining	Added value museum shop	33	3.1	0.7	3.4	0.7	2.8	0.6	.01	3.1	0.6	3.0
	Added value museum restaurant	33	3.7	0.6	3.9	0.6	3.5	0.5	.04	3.9	0.5	3.6

\*Note. Participants could indicate on a five-point Likert scale to what extent they agreed with the statements (1 = strongly disagree, 5 = strongly agree).

**Table 17**  
Items of the social dimension of Museum Experience

		Total			Positive		Negative		Pos. - Neg. P Value T-test	Explorers		Facilitators		Exp. - Fac. P Value T-test
		N	M	SD	M	SD	M	SD		M	SD	M	SD	
Employees	Helpfulness	33	4.3	0.8	4.5	0.7	4.1	0.8	.10	4.4	0.9	4.2	0.7	.51
	Provision of information	33	3.4	1.0	3.8	1.0	3.1	0.9	.07	3.3	1.2	3.4	0.8	.74
Social density	Not bothered by visitors	33	4.5	0.7	4.7	0.5	4.2	0.8	.07	4.5	0.7	4.4	0.8	.72
	Not crowded	33	4.5	0.6	4.7	0.6	4.2	0.6	.03	4.4	0.8	4.6	0.5	.46

\*Note. Participants could indicate on a five-point Likert scale to what extent they agreed with the statements (1 = strongly disagree, 5 = strongly agree).

**Table 18**  
Items of the socially-symbolic dimension of Museum Experience

		Total			Positive		Negative		Pos. - Neg. P Value T-test	Explorers		Facilitators		Exp. - Fac. P Value T-test
		N	M	SD	M	SD	M	SD		M	SD	M	SD	
SSD	Feel at home	33	4.1	0.5	4.4	0.5	3.9	0.3	.00	4.1	0.6	4.1	0.3	.81
	Connection with TwentseWelle	33	3.5	0.8	3.8	0.8	3.2	0.7	.04	3.4	0.9	3.6	0.8	.45
	Connection with region of Twente	33	4.0	0.7	4.3	0.6	3.8	0.7	.03	4.2	0.6	3.9	0.8	.28
	Learning about region of Twente	33	3.8	0.7	4.0	0.7	3.5	0.5	.04	3.7	0.8	3.8	0.8	.83
	Proud of region of Twente	33	3.6	0.9	3.9	1.0	3.2	0.8	.04	3.4	0.9	3.6	1.0	.49
	Fun to learn about the heritage of Twente	33	4.3	0.6	4.5	0.6	4.1	0.4	.03	4.4	0.5	4.2	0.7	.37

\*Note. Participants could indicate on a five-point Likert scale to what extent they agreed with the statements (1 = strongly disagree, 5 = strongly agree).

### Conclusion total score

As the results show, the mean score on most of the physical dimension aspects lay between 3 (neutral about the statement) and 4 (agreeing with the statement). The scores on *signage*, *brochures*, and *amount of information* were lower. The mean score on the social dimension aspects lay between 4 and 5 (totally agreeing with the statement), which is positive. Only the score on *provision of information* was lower. And finally, the mean scores on most of the socially-symbolic dimension aspects lay between the 3.5 (neutral about the statement) and 4. The aspects *feel at home* and *fun to learn about the heritage of Twente* had a higher mean score.

### Conclusion group scores

Participants with a positive museum experience were significantly more positive about the *decoration*, *order of the exhibition*, and the *museum shop* and *restaurant* than negative participants. Also, positive participants thought the museum was less *crowded* and *feel more connected with the museum* as compared to negative participants. Furthermore, no significant differences were found on the museum experience aspects between Explorers and Facilitators.

## 4.4 Loyalty

In order to measure the effect of the museum experience on loyalty, different measurements were performed. First, the items used to measure loyalty are shown in Table 19. As can be seen, the mean scores of the total group of participants are quite high, which is positive.

An independent samples T-test was performed to compare if there is a significant difference between the item scores of loyalty by positive and negative participants, and by Explorers and Facilitators. As can be seen in Table 19, a significant difference on *positive visit* ( $t(31) = -2.905$ ,  $p < .01$ ), *word of mouth* ( $t(31) = -3.394$ ,  $p < .01$ ) and *revisit intention* ( $t(31) = -2.100$ ,  $p < .05$ ) was found between the positive and negative participants. Participants with a positive museum experience scored significantly higher on all loyalty items than participants with a negative museum experience.

**Table 19**  
*Items of loyalty*

	Loyalty	Positive visit	Total		Positive		Negative		Pos. - Neg. P Value T-test	Explorers		Facilitators		Exp. - Fac. P Value T-test	
			N	M	SD	M	SD	M	SD	M	SD	M	SD		
		Word of mouth	33	4.4	0.6	4.7	0.5	4.2	0.5	.01	4.4	0.7	4.4	0.5	.97
		Revisit intention	33	4.4	0.6	4.7	0.5	4.1	0.5	.00	4.4	0.7	4.4	0.5	.97
			33	4.5	0.6	4.7	0.5	4.3	0.6	.04	4.3	0.6	4.6	0.5	.15

\*Note. Participants could indicate on a five-point Likert scale to what extent they agreed with the statements (1 = strongly disagree, 5 = strongly agree).

#### 4.4.1 Relation between Museum Experience and loyalty

Table 20 shows the correlation between the scales of Museum Experience and loyalty. A Pearson's  $r$  data analysis revealed a positive correlation between the socially-symbolic dimension and loyalty,  $r = .62$ . Participants who had a high rate on the socially-symbolic dimension, also had a high rate on loyalty.

**Table 20**  
*Correlation between scales of Museum Experience and Loyalty*

	1	2	3	4	5	6
1. Design						
2. Information		-.06				
3. Shopping & dining	.29		.05			
4. Employees	.03		.15	.39*		
5. Social density	.36*		-.17	.22		
6. Socially-symbolic dimension	.45**		.20	.33	.24	.42*
7. Loyalty	.30		.29	.28	.23	.28
	* $p < .05$ ; ** $p < .01$					

The *socially-symbolic dimension* is the only scale correlating with *loyalty*. Therefore, a regression analysis was conducted to determine if the degree of loyalty can be predicted from the socially-symbolic dimension. The results of the regression indicated the predictor explained 38% of the variance,  $R^2 = .38$ , adjusted  $R^2 = .36$ ,  $F(1, 31) = 19.2$ ,  $p < .001$ . It was found that the *socially-symbolic dimension* significantly predicted *loyalty* ( $\beta = .62$ ,  $p < .001$ ).

**Table 21**  
*Unstandardised (B) and standardised ( $\beta$ ) regression coefficients for the socially-symbolic dimension in a simple linear regression model predicting the degree of loyalty*

	B	SE	$\beta$
Constant	1,89	0,59	
Socially-symbolic dimension	0,66	0,15	0,62

To investigate whether the identity-related profile moderates the effect of the socially-symbolic dimension on loyalty, a multiple regression analysis was conducted. No significant effect was found between the socially-symbolic dimension and loyalty with the identity-related profiles as a moderator,  $R^2 = .43$ , adjusted  $R^2 = .37$ ,  $F(3, 29) = 7.2$ ,  $p < .001$ ,  $\beta = 1.02$ ,  $t(29) = 1.83$ , ns.

#### 4.4.2 Group differences on loyalty

To compare if there is a significant difference between the loyalty scale by positive and negative

participants, and by Explorers and Facilitators, an independent samples T-test was performed. As can be seen in Table 22, a significant difference on loyalty was found between the positive and negative participants. Participants with a positive museum experience scored significantly higher on loyalty than participants with a negative museum experience ( $t (31) = -3.016$ ,  $p < .01$ ).

**Table 22**  
*Loyalty of participants towards TwentseWelle*

		M	SD	T	DF	P value T-test
Total		4.4	0.5	-	-	-
Visitor Experience	Positive	4.7	0.5	-3.016	31	.01
	Negative	4.2	0.5			
Identity-related profiles	Explorers	4.4	0.6	-0.493	-0.477	.63
	Facilitators	4.5	0.5			

## 5 Methods Study 2

Study 1 measured the effect of the museum experience on brand image and loyalty of parents visiting the museum on their own. A second study was performed to measure if parents visiting the museum with their children have different results on the museum experience, brand image and loyalty.

### 5.1 Procedure

Participation in Study 2 took place between April 2016 and May 2016. The criterium for participating in this study were the same as for Study 1. The wayfinding task and questionnaire were also applied in Study 2. The wayfinding task was performed by making use of a children's quest through museum TwentseWelle. The questions and assignments of the quest were described in four different booklets. Images of the booklets are included in Appendix D. Of each booklet, one assignment was selected. These assignments are related to specific museum objects. Participants had to perform these four assignments, and could use any form of aid. There was no time limit. After participants performed the wayfinding task, they were asked to fill out a questionnaire.

Below (Table 23), an overview of the research tasks is shown.

**Table 23**  
*Overview of the research tasks*

Start of the research (location: entrance)	*Brand association task is performed *The way-finding task is explained
Way-finding task (location: permanent exhibition)	*Participant enters the permanent exhibition <i>The Big Story</i> *Start way-finding task
Questionnaire (location: entrance)	*Questionnaire is filled out

### 5.2 Instruments

In order to conduct this research, multiple measuring instruments were used. Table 24 shows which measuring instrument measures which variable.

**Table 24**  
*Measuring instruments of variables*

Variable	Measuring instrument
Museum experience	Questionnaire
Way-finding	Wayfinding task, questionnaire
Brand Image	Free association technique, personality traits, questionnaire
Loyalty	Questionnaire
Identity-related profiles (moderator)	Questionnaire

#### 3.2.1 Wayfinding task

The four museum objects (assignments) participants had to find were *Grote ronde film* ('big round'

movie about hunters and collectors in the prehistory), *Lade met emmericoon* (drawer with bucket image; stories about utensils used in the old farmhouse), *Diorama Natuur* ('digital' diorama about nature), and *Lade met 'Martinus'-icoon* (drawer with 'Martinus' image; stories about the museum). These particular objects were selected to provide different levels of difficulty in wayfinding.

### **5.2.2 Post wayfinding task questionnaire**

The same questionnaire as used in Study 1 was used in Study 2 to measure museum experience, brand image, loyalty, and identity-related profiles. Questions with regard to the wayfinding task were added to the questionnaire. These questions are included in Appendix E.

### *Wayfinding*

In this second study, the wayfinding performance and wayfinding process were also applied in order to analyse the wayfinding of museum visitors. The wayfinding performance consists of whether or not objects were found. The wayfinding process consists of the level of difficulty, how the object was found, and what type of aids were used to find the object. These measurements were derived from studies of Kozlowski and Bryant (1977), and Theunissen (2015).

### **5.3 Participants**

Participants of Study 2 were recruited via personal contacts and ad hoc at the museum entrance. In total, five families participated: five fathers, five mothers, and ten children. Both fathers and mothers performed the wayfinding task (together with their children), performed the brand image tasks, and filled out the questionnaire. The demographic profile of the participants is shown below.

**Table 25**  
Demographic profile of the participants  
(N=10)

		N	%
Gender			
	Male	5	50
	Female	5	50
Age			
	< 30	1	10
	30 - 40	6	60
	41 - 50	2	20
	> 50	1	10
Level of education*			
	Low	0	0
	Middle	2	20
	High	8	80

\*Note: the level of education is covered by the following type of educations. Lower education: elementary school, high school. Middle education: Dutch MBO. Higher education: bachelor of university of applied sciences (Dutch HBO), bachelor of university, master or doctorate degree.

Participants could indicate which of the following identity-related profiles they identify themselves:

*Explorers, Facilitators, Rechargers, Professionals / Hobbyists, and Affinity seekers.* The results are shown in Figure 13.

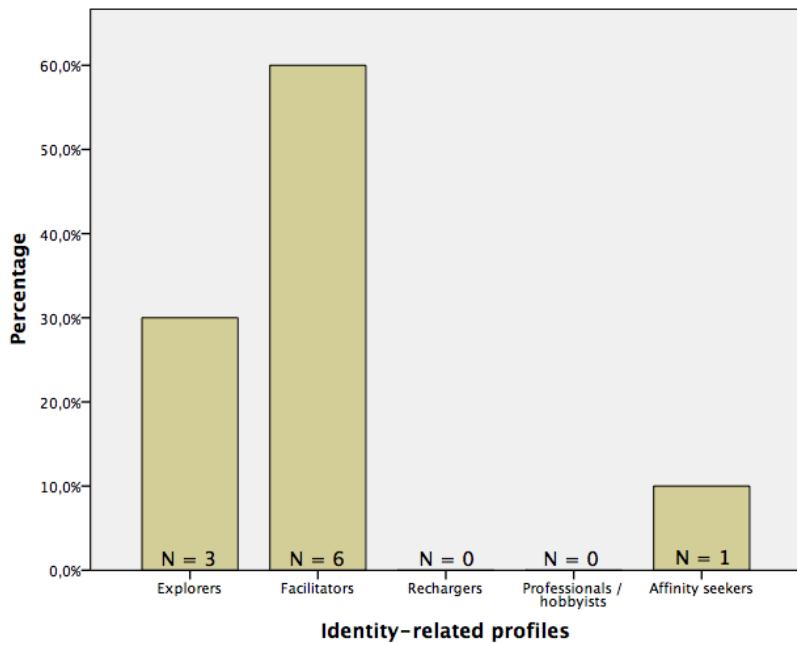


Figure 13. Results: identity-related profiles of participants

## 5.4 Analysis

### 3.4.1 Post wayfinding task questionnaire

The data gathered with the questionnaire was analysed the same way as in Study 1. Scales of the dimensions of museum experience and loyalty were created with the aid of SPSS. The reliability of the scales was tested by means of the Cronbach's alpha. From the physical dimension scales, *design* was found reliable ( $\alpha = .88$ ) and is a useful scale to this study. Both social dimension scales, *social density* ( $\alpha = .75$ ) and *employees* ( $\alpha = .63$ ), were found reliable and are useful scales to this study. The socially-symbolic dimension scale was not found reliable. And finally, the scale of loyalty was found reliable ( $\alpha = 1.00$ ) and is a useful scale to this study.

## 6 Results Study 2

In this section, the results of Study 2 are discussed. These results are presented in the same way as for Study 1, except no group differences were measured.

### 6.1 Wayfinding

Wayfinding was measured through participants' *wayfinding performance* and *wayfinding process*.

Below the results are shown.

#### 6.1.1 Wayfinding performance

##### *Finding the object*

As can be seen in Table 26, the objects were found by most of the participants, although Object 4 was not found by two out of ten (20%) participants.

**Table 26**

*Number of participants that found the objects*

	N	%	SD
Object 1	10	100	.0
Object 2	10	100	.0
Object 3	9	90	.3
Object 4	8	80	.4

#### 6.1.2 Wayfinding process

##### *Level of difficulty*

The mean score, and standard deviation of the level of difficulty are shown in Table 27. The labels *easy* (1) and *hard* (2) were used to indicate the level of difficulty. The mean scores of Object 2 and Object 4 are greater than the mean scores of Object 1 and Object 3. Therefore, Object 2 and Object 4 seemed 'harder to find'. Participants indicated that these objects were harder to find because there was no signage that referred to these objects. Therefore participants had to actively search for these objects.

**Table 27**

*Level of difficulty of way-finding task*

	M	SD
Object 1	1.0	.0
Object 2	1.8	.4
Object 3	1.2	.4
Object 4	1.9	.3

##### *How participants found the objects*

Table 28 shows how participants found the objects. As can be seen, Object 1 was mostly found by

participants through *recognition / logic* or their *children*. Most participants had to *search* for Object 2, but found the object by themselves. Participants used different ways to find Object 3. And object 4 was mostly found by participants through *searching*, by means of an *aid*, and their *children*.

**Table 28**  
*How participants found the objects*

	Recognition / logic		Searching		Aid		Children		Partner	
	N	%	N	%	N	%	N	%	N	%
Object 1	5	50	0	0	0	0	4	40	0	0
Object 2	2	20	6	60	2	20	0	0	0	0
Object 3	3	30	1	10	3	30	1	10	1	10
Object 4	0	0	2	20	3	30	2	20	1	10

### Type of aids used

Table 29 shows the type of aids used by participants to find the objects. Participants could indicate which of the following aids they had used: employee, map (on the back cover of the booklets), recognition of the object by means of the name, none.

**Table 29**  
*Type of aids used to find the objects*

	Employee		Map		Recognition name		None	
	N	%	N	%	N	%	N	%
Object 1	0	0	0	0	2	20	8	80
Object 2	0	0	2	20	5	50	3	30
Object 3	2	20	1	10	3	30	3	30
Object 4	2	20	1	10	3	30	2	20

## 6.2 Brand Image

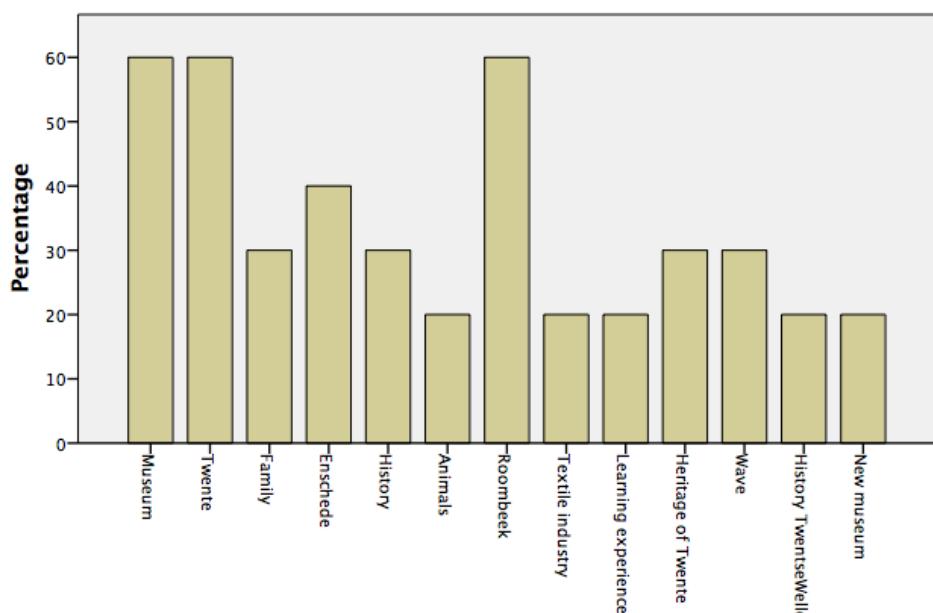
The *free association technique*, and *personality traits* were applied to measure the influence of the museum experience on brand image. Below, the results are shown.

### 6.2.1 Free association technique

The free association technique was performed before and after the wayfinding task. Figure 14 shows the results of the free association technique before the wayfinding task, and Figure 15 shows the results of the free association technique after the wayfinding task.

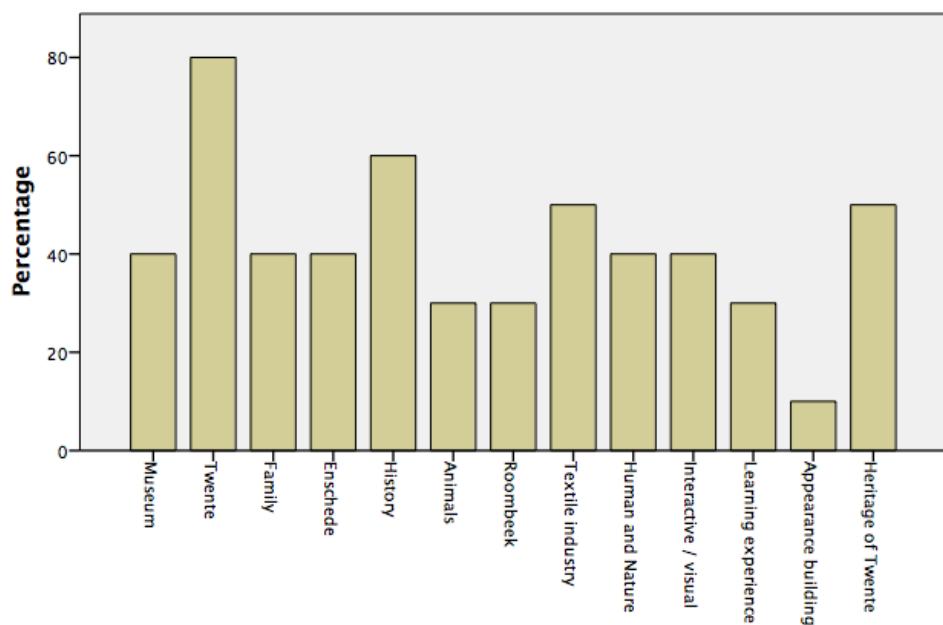
Most of the words mentioned before and after the wayfinding task are similar. Words such as *museum* and *Roombeek* decreased in percentage after the wayfinding task, and *Twente*, *history*, *textile industry*, and *heritage of Twente* increased in percentage. The words *wave* and *new museum* were only mentioned before the wayfinding task. In German, “Welle” means wave. Therefore the word *wave* might be mentioned by participants since the name of the museum is Twentse *Welle*. The words *man and nature* and *interactive / visual* were only mentioned after the wayfinding task.

**Free association before Way-finding task**



*Figure 14. Free association technique: brand image before wayfinding task*

**Free association after Way-finding task**



*Figure 15. Free association technique: brand image after wayfinding task*

### 6.2.2 Brand personality traits

Figure 16 shows the personality traits results of participants.

### Personality traits

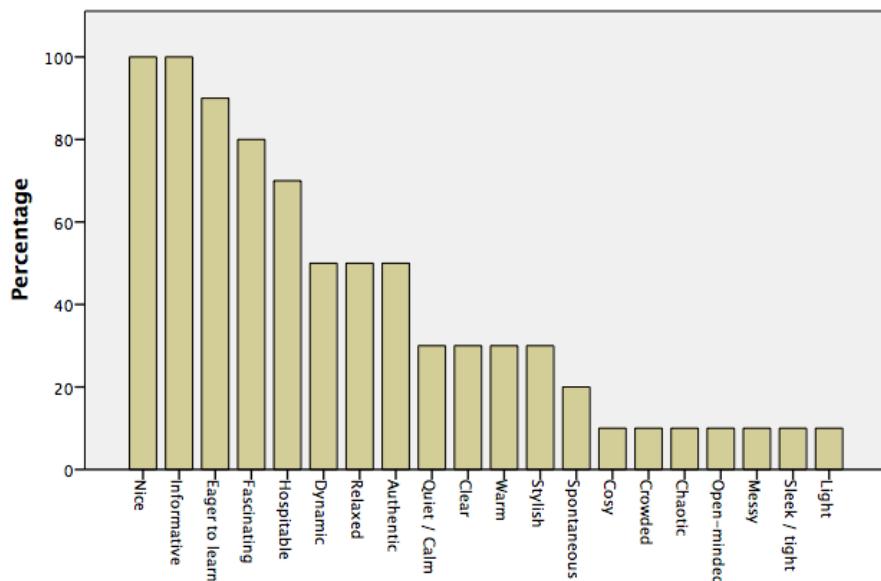


Figure 16. The personality traits results of participants

As can be seen in Figure 16, all ten participants associated the personality traits *nice* and *informative* with museum TwentseWelle. Most of the participants associated the personality traits *eager to learn*, *fascinating*, and *hospitable* with museum TwentseWelle. One participant associated the negative personality traits *crowded*, *chaotic* and *messy* with museum TwentseWelle. None of the participants associated the personality trait *boring* with museum TwentseWelle.

#### 6.2.3 Rating museum TwentseWelle

Participants rated museum TwentseWelle on a scale from 1 to 10. On average, the participants rated museum TwentseWelle with an 8.6.

### 6.3 Museum experience

Museum experience was measured using the items displayed in the tables below. Table 30, Table 31, and Table 32 show the medium scores and standard deviation of the items of the physical dimension, social dimension, and socially-symbolic dimension. All items are of a positive nature. The mean scores of the physical dimension aspects lay between 3 (neutral about the statement) and 4 (agreeing with the statement), except for *architecture* which had a higher mean score. The mean scores on the social dimension lay between 4 (agreeing with the statement) and 5 (totally agreeing with the statement), which is positive. Only the score on *provision of information* was

lower.

Finally, the mean scores on the socially-symbolic dimension aspects lay between 3.5 (neutral about the statement) and 5 (totally agreeing with the statement).

**Table 30**  
*Items of the physical dimension of Museum Experience*

		N	M	SD
Ambient conditions	Light	10	3.1	1.3
	Temperature	10	3.4	0.8
	No noise	10	3.7	1.0
Design	Architecture	10	4.2	0.6
	Decoration / museumobjects	10	4.0	0.7
Signs	Signage	10	3.0	1.2
Way-finding	Parking lot to entrance	10	3.1	1.1
	Clear routing	10	3.6	0.7
	Logical order exhibition	10	3.9	0.9
	Information displays	10	3.5	1.0
Information	Brochures	10	3.3	0.7
	Displays added value	10	3.9	0.7
	Amount of information	10	3.5	0.7
Shopping & dining	Added value museum shop	10	3.0	1.1
	Added value museum restaurant	10	3.8	0.6

**Table 31**  
*Items of the social dimension of Museum Experience*

		N	M	SD
Employees	Helpfulness	10	4.3	0.5
	Provision of information	10	3.7	0.8
Social density	Not bothered by visitors	10	4.1	0.6
	Not crowded	10	4.4	0.5

**Table 32**  
*Items of the socially-symbolic dimension of Museum Experience*

		N	M	SD
SSD	Feel at home	10	3.9	0.3
	Connection with TwentseWelle	10	3.6	0.5
	Connection with region of Twente	10	4.1	0.4
	Learning about region of Twente	10	4.2	0.4
	Proud of region of Twente	10	3.5	1.0
	Fun to learn about the heritage of Twente	10	4.6	0.5

## 6.4 Loyalty

Table 33 shows the median scores and standard deviation of the items used to measure loyalty. The mean scores of the loyalty items lay between the 4 (agreeing with the statement) and 5 (totally agreeing with the statement), which is positive.

**Table 33**  
*Items of loyalty*

		N	M	SD
Loyalty	Positive visit	10	4.4	0.5
	Positive word of mouth	10	4.4	0.5
	Revisit intention	10	4.4	0.5

## 7 Discussion

This study was performed to investigate the effect of the museum experience on brand image and loyalty. Furthermore, the differences between male and female participants, participants with a positive and negative visitor experience, the identity-related profiles Explorers and Facilitators, and parents versus families were investigated. The results were gathered by performing two studies; Study 1: parents visiting the museum on their own; Study 2: parents visiting the museum with their children. In this section, the main findings are discussed and an overall conclusion is given. Limitations of this study and suggestions for future research are discussed. Finally, the managerial implications are presented that provide an overview of the added value of this study.

### 7.1 Main findings

#### *Brand image*

The results of the free association task and brand personality traits task of Study 1 and Study 2 are quite similar. Both studies show a difference in words mentioned before and after the museum visit. Words derived from the first free association task were general terms related to arts and culture, and the region in a geographical sense. After the museum visit, these words were replaced by more specific words that relate to the content of the exhibition. It can be concluded that a museum visit influences the brand image and creates a more specific and content related brand image. In this case, brand image is derived from the experience gained from the content of the museum exhibition. These findings are in line with the study of Geissler et al. (2006) that suggests permanent art collection, changing exhibitions, and perceptions of accessibility have an influence on the brand image of museums (Geissler, Rucks, & Edison, 2006).

The brand personality traits participants associated the most with museum TwentseWelle are *informative, eager to learn, and nice*. The traits *hospitable, quiet / calm, relaxed, fascinating, and authentic* were mentioned by more than fifty percent of participants. These findings are in line with the museum experience models of Kotler et al. (2008) and Falk and Dierking (1992). Kotler et al. suggests that visitors encounter recreational, social, authentic, and learning experiences during their museum visit. The model of Falk and Dierking (1992) shows that the personal-, social-, and physical context together create the museum experience. *Nice, and hospitable* are important traits in the present study and correspond to the aspects of the physical- and social context.

#### *Loyalty*

Both studies showed that loyalty was positively rated by participants after visiting the museum.

Literature (Bitner, 1992; Forrest, 2013; Kottasz, 2006; Rosenbaum and Massiah, 2011) suggest a relation between the aspects of the physical and social dimension and loyalty. No studies were found that suggest a relation between the socially-symbolic dimension and loyalty. The present study showed that the degree of loyalty can be predicted from the *socially-symbolic dimension*.

Results of the present study also show a significant difference in loyalty between positive and negative participants. In other words, visitors with a positive museum experience are significantly more loyal than negative visitors. No studies were found that measure the effect of a positive or negative museum experience on loyalty. However, the studies of Yu and Dean (2001) show that positive and negative emotions correlate with loyalty and can predict loyalty. Bloemer and de Ruyte (1999) also suggest a relation between positive emotions and loyalty.

### *Wayfinding*

Overall, the wayfinding tasks were successfully performed by most of the participants. Since the wayfinding tasks of Study 1 and Study 2 are different, the results of both studies on wayfinding can not be compared one-on-one. Both studies do show that participants indicated that objects were harder to find if they are not provided with a name tag nor referred to by signage or displays.

As the results of Study 1 show, Object 4 was found by the least number of participants as compared to the other objects. The heatmaps of the total group of participants support this and show that some participants ended wayfinding task 4 in the *living room* instead of the *language room*. These participants indicated that they thought the *living room* was the *language room*. It can be concluded that participants experienced more wayfinding difficulties with regard to Object 4 as compared to the other objects. Also, significantly less aids were used to find Object 4.

The study of Chebat et al. (2007) suggests that females complete their wayfinding faster and more efficiently. The results of the present study are in line with these findings. Females completed the wayfinding task in a significantly shorter time and distance than males. The heatmaps support these findings. The heatmaps of Object 1 and Object 2 show that both male and female participants explore the first part of the museum and most participants take the logical route. As for the last two objects, there is a difference. Most females take the logical route and explore the last parts of the museum to get to these objects, but males spread out through the museum and also revisit parts of the museum they explored earlier.

The group of *visitor experience* was derived from the assessment of the museum experience by participants. Two groups arose: positive participants and negative participants. No literature was found where these two groups were compared in relation to the museum experience and wayfinding, brand image, or loyalty. The present study did not show any differences on wayfinding between positive and negative participants. This also accounts to the identity-related profiles Explorers and Facilitators. A difference between the identity-related profiles in wayfinding was expected since Explorers and Facilitators have different visitor motivations. Therefore, it was expected that they use different aids to find the objects, which might have led to different wayfinding performance.

The results of Study 2 show that most participants successfully completed the wayfinding tasks. However, participants indicated that Object 2 and Object 4 were harder to find, because there was no signage that referred to these objects.

## 7.2 Limitations and future research

Since many aspects of the museum experience were measured with the aid of the questionnaire, and the questionnaire also contained questions regarding brand image, loyalty, and identity-related profiles, each subject was measured by limited items in order to create a manageable questionnaire. This might have affected the reliability of scales. For instance, the scale *design* consists of the aspects *architecture*, *decoration*, and *objects*. These aspects however, were measured with the aid of two questions. Future research should focus on the museum experience as presented in the conceptual model of the present study. It would be interesting to measure the reliability of the scales of museum experience by making use of a broader questionnaire with more items.

Another limitation of this study is the number of participants. There were a few criteria for participating in this Study 1. First, the participant had to be a parent with children between the six and twelve years old. Second, the participant never visited TwentseWelle before. And third, the participant had to live in the Twente region. In total, 51 parents (13 male, 38 female) responded to the messages placed in school newsletters and on Facebook pages. Only 33 of them (9 male, 24 female) made an appointment and actually kept their appointment. The other 18 parents did not respond after first contact or did set an appointment but never showed up.

Due to the applied criteria, only a small group of potential participants remained. This made it harder to recruit participants. People that visited TwentseWelle before might have been more interested in this study than people that never visited TwentseWelle before. Parents is also a more

difficult target group since they might both have a job and take care of their children. On weekdays, parents might not be able to participate because of their work. Since children could not come along to the museum as the parents were participating, this also made participating more difficult.

The high ratio of non-response might be due to the fact that people thought participating was non-committal. Also, people recruited via Facebook might feel less obliged to keep their appointment as compared to people recruited via elementary schools. Since participation took about an hour, people might also thought it was too time-consuming and therefore did not show up. Some participants simply forgot the appointment. Setting up a new appointment with these participants failed because of a lack of time of the participants.

The group of participants was unbalanced in terms of gender. Way more females participated in this study as compared to males. This made it more difficult to compare these groups. The results therefore are less reliable.

Wayfinding in a museum setting as measured in this study was never done before. It would be interesting to investigate the difference between the identity-related profiles of Falk (2011) on wayfinding. The present study did not show a significant effect between Explorers and Facilitators in wayfinding. However, since the participants have different motivations to visit a museum, they might differ in their wayfinding. For example, Facilitators are more socially motivated and might ask an employee for help more often than an Explorer. An Explorer, in turn, might use more displays since they are curiosity-driven and interested in the content of the museum (Falk 2011). The study of Chebat et al. (2004) showed that hedonistic values and the use of information sources lead to a reduction in wayfinding time. So, it would be interesting to measure if these profiles use different sources in finding their way in the museum setting, and if this results in different wayfinding performance. The non-significant differences between Explorers and Facilitators might be due to the applied criteria of this study. Participants were all parents and live in the Twente region. Also, most participants were female. A more diverse group of participants might have resulted in different identity-related profile results.

Finally, it would be interesting to perform this research in another museum. Museum TwentseWelle focuses mainly on the region of Twente. The free association task shows that this museum is associated with the heritage of Twente and the Twentse dialect, for example. The scores on the socially-symbolic dimension were quite high and can predict the degree of loyalty. Another museum might give a different outcome. The museum setting of TwentseWelle is also striking. The museum building is one giant hall. Museum objects and some walls divide the hall into smaller spaces.

Almost all objects are located on the ground floor. Therefore, another museum setting might give different outcomes on wayfinding.

### 7.3 Overall conclusion

Referring to the conceptual model of this study, the following conclusions can be drawn. Overall it can be concluded that the museum experience influences brand image and loyalty.

Brand image is created by the associations a consumer has with a brand (Keller, 1993; McGraw-Hill, 2010), such as experiences (Aaker, 1996; Kotler et al. 2008; Sallam, 2014). The present study showed that the experience of a museum visitor changes their perceived brand image and creates a specific and content related brand image. The brand personality task revealed that most participants associated the traits *informative*, *eager to learn*, and *nice* with the museum after their visit.

According to Kotler et al. (2008), museums fuel the visitors' learning experience. Kotler also suggests that "the social and recreational experience are as important or more important than educational and intellectual ones" (Kotler, & Kotler, 2000, p. 278). Results of the present study however, revealed that educational and intellectual related traits are associated with the museum by more participants than social and recreational related traits.

The museum experience models of Kotler et al. (2008) and Falk and Dierking (1992) contain personal, social and physical aspects of the museum environment. Socially-symbolic aspects were not included in these models, therefore the additional servicescape model of Rosenbaum and Massiah (2011) was included in this study to complement the museum experience models. In the present study, the socially-symbolic dimension was included as a new dimension of the museum experience. An effect of the socially-symbolic dimension on loyalty was found. The degree of loyalty can be predicted from the *socially-symbolic dimension*. No studies have investigated this relation before, therefore this is a new finding. Another finding in this study is the relation between participants with a positive museum experience and their degree of loyalty.

In this study, no striking differences were found between Explorers and Facilitators, and parents visiting the museum on their own versus as a family. A difference on gender was found. Females completed the wayfinding task in a significantly shorter time and distance than males.

### 7.4 Managerial implications

This study has provided a new research model for the museum setting. By using both quantitative and qualitative measurements, an attempt was made to investigate the effect of the museum experience, with wayfinding in particular, on the perceived brand image and loyalty of different

types of visitors. Also, with the aid of heatmaps, the movements of museum visitors were visualized. This study can serve as a basis to develop new research of wayfinding in a museum setting and the impact of the museum experience on brand image and loyalty of different types of visitors.

An interesting revelation of this study is the effect of a positive and negative museum experience on loyalty, and the effect of the socially-symbolic dimension on loyalty. Since museum TwentseWelle was rated with an 8.2 on average by positive participants, and a 7.9 on average by negative participants, studies performed in other museum settings might provide greater differences between the rates on museum experience by positive and negative museum visitors and the effect on loyalty. The context of the permanent exhibition of TwentseWelle is mainly about the heritage of Twente, the textile past of the Twente region, and the '*Twents dialect*'. Future research should investigate if the socially-symbolic dimension can be applied to for example a museum of modern art, and if this setting also shows an effect of the socially-symbolic dimension on loyalty.

By means of the free association technique, a difference was measured between the brand image before and after the museum visit. It appears that the museum visit creates a brand image that is related to the museum context. This should also be investigated in other museum settings in order to investigate the effect of the museum experience on brand image. The brand personality traits task showed that the learning experience is associated with the museum visit. This finding should also be considered in future research on the brand image in a museum setting.

The results of this study show TwentseWelle that the brand image they evoke is related to their permanent exhibition, and that visitors have similar perceived brand images after visiting the museum. This study also shows that the learning experience is important to their visitors.

TwentseWelle can perform another research to investigate how they can fuel the learning experience in specific. As the socially-symbolic dimension affects the degree of loyalty, TwentseWelle should continue to invest in their socially-symbolic dimension.

This study revealed that some museum objects are hard to find as compared to other objects. Information provided from the in-depth-interviews showed that the lack of name tags and information sources caused these high levels of difficulty. Sometimes, the digital information displays did not work. So, in this case, participants were not able to read the information, because it was not available. Finally, participants indicated that a map of the museum would have helped them in finding their way. In order to improve the wayfinding of visitors, TwentseWelle should consider to place name tags, and create an informative brochure provided with a map.

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## **Appendix A**

### In-depth-interview regarding the wayfinding task

- Heeft u het lös hoes gevonden tijdens uw museumbezoek? Zo ja, hoe? Was het gemakkelijk te vinden? Heeft u moeilijkheden ondervonden bij het zoeken van het lös hoes? Van welke hulpmiddelen heeft u gebruik gemaakt tijdens het zoeken van het lös hoes? Heeft u hulp gevraagd aan medewerkers, heeft u gebruik gemaakt van bewegwijzering? Kunt u mij meer informatie geven over het lös hoes? Hoe bent u aan deze informatie gekomen?
  - Heeft u stoommachine de Agneta gevonden tijdens uw museumbezoek? Zo ja, hoe? Was het gemakkelijk te vinden? Heeft u moeilijkheden ondervonden bij het zoeken stoommachine de Agneta? Van welke hulpmiddelen heeft u gebruik gemaakt tijdens het zoeken van stoommachine de Agneta? Heeft u hulp gevraagd aan medewerkers, heeft u gebruik gemaakt van bewegwijzering? Kunt u mij meer informatie geven over stoommachine de Agneta? Hoe bent u aan deze informatie gekomen?
  - Heeft u diorama de versnelling gevonden tijdens uw museumbezoek? Zo ja, hoe? Was het gemakkelijk te vinden? Heeft u moeilijkheden ondervonden bij het zoeken van diorama de versnelling? Van welke hulpmiddelen heeft u gebruik gemaakt tijdens het zoeken van diorama de versnelling? Heeft u hulp gevraagd aan medewerkers, heeft u gebruik gemaakt van bewegwijzering? Kunt u mij meer informatie geven over diorama de versnelling? Hoe bent u aan deze informatie gekomen?
  - Heeft u de taalkamer gevonden tijdens uw museumbezoek? Zo ja, hoe? Was het gemakkelijk te vinden? Heeft u moeilijkheden ondervonden bij het zoeken van de taalkamer? Van welke hulpmiddelen heeft u gebruik gemaakt tijdens het zoeken van het de taalkamer? Heeft u hulp gevraagd aan medewerkers, heeft u gebruik gemaakt van bewegwijzering? Kunt u mij meer informatie geven over de taalkamer? Hoe bent u aan deze informatie gekomen?
- Zijn er hulpmiddelen die u mistte tijdens uw museumbezoek?
- Heeft u nog andere opmerkingen over uw bezoek aan museum TwentseWelle?

## Appendix B

### Questionnaire

#### **Demographic questions**

- Wat is uw leeftijd? .... jaar
- Wat is uw geslacht?  Man  Vrouw
- Wat is de hoogst genoten opleiding waar u een diploma van heeft?
  - Basis onderwijs
  - Middelbaar onderwijs
  - MBO
  - HBO
  - Universitair onderwijs

#### **Identity-related profiles of Falk**

Hieronder staan 5 typen bezoekers. Lees informatie over deze bezoekers aandachtig door.

1. *Onderzoekers / Ondernemers (Explorers)* zijn **nieuwsgierig** aangelegd en hebben een **algemene interesse** in de inhoud van het museum. Zij verwachten om iets te vinden dat hun aandacht vasthouwt en verwachten tijdens hun bezoek iets te **leren**.
2. *Facilitatoren (Facilitators)* hebben een **sociale** motivatie om een museum te bezoeken. Hun bezoek is voornamelijk gericht op de **ervaring** en het **leerproces** van de mensen met wie zij het museum bezoeken, zoals hun **kinderen**.
3. *Opladers (Rechargers)* bezoeken het museum voornamelijk vanwege de **rustige en relaxte omgeving**; zij gebruiken dit bezoek om even uit het dagelijks leven te stappen en om **tot zichzelf te komen**.
4. *Professionals / Hobbyisten* voelen een nauwe band tussen het **museum** en hun **passies**. Zij bezoeken een museum om **ideeën** op te doen die hen kunnen helpen bij het **bereiken van een specifiek doel**.
5. *Affiniteit zoekers (Affinity seekers)* zijn gemotiveerd om een **museum of specifieke expositie** te bezoeken die **raakvlakken** hebben met hun **(culturele) achtergrond** en/of **persoonlijkheid**.

Met welk type bezoeker identificeert u zich het meest?

Nummer: ...

#### **Measuring Brand Image**

##### *Free association technique*

Schrijf alle woorden/termen op die in uw hoofd opkomen bij het horen van de naam TwentseWelle.

De volgende woorden associeer ik met TwentseWelle:

*Kruis aan wat van toepassing is.*

- |                                      |                                     |                                      |   |
|--------------------------------------|-------------------------------------|--------------------------------------|---|
| <input type="checkbox"/> Ruimdenkend | <input type="checkbox"/> Ontspannen | <input type="checkbox"/> Rustig      | <input type="checkbox"/> Chaotisch      |
| <input type="checkbox"/> Leergierig  | <input type="checkbox"/> Rommelig   | <input type="checkbox"/> Fascinerend | <input type="checkbox"/> Overzichtelijk |
| <input type="checkbox"/> Gastvrij    | <input type="checkbox"/> Secuur     | <input type="checkbox"/> Huiselijk   | <input type="checkbox"/> Informatief    |

- |                                    |                                     |                                   |                                   |
|------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Mooi      | <input type="checkbox"/> Strak      | <input type="checkbox"/> Stijlvol | <input type="checkbox"/> Licht    |
| <input type="checkbox"/> Warm      | <input type="checkbox"/> Druk       | <input type="checkbox"/> Saai     | <input type="checkbox"/> Spontaan |
| <input type="checkbox"/> Dynamisch | <input type="checkbox"/> Authentiek |                                   |                                   |

## Measuring Museum Experience

### *Physical dimension*

- Vanaf de parkeerplaats kon ik de ingang van TwentseWelle gemakkelijk vinden.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- Het was voor mij duidelijk welke route ik kon volgen in het museum.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De expositie was in een logische volgorde opgesteld.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De borden met informatie over de expositie waren van toegevoegde waarde voor mijn bezoek.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De borden met informatie over de expositie waren te beperkt.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- Ik kon de borden met informatie over de expositie niet vinden.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- Ik kon brochures met informatie makkelijk vinden.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De brochure geeft een goede impressie van de expositie.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De verlichting in het museum is goed.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De temperatuur in het museum is te hoog.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- Het is te rumoerig in het museum.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- De winkel geeft een toegevoegde waarde aan mijn bezoek.  
Helemaal mee eens o - o - o - o - o Helemaal mee oneens
- Het restaurant geeft een toegevoegde waarde aan mijn bezoek.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- De architectuur van het gebouw past bij de uitstraling van TwentseWelle.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- De vormgeving van het gebouw aan de binnenkant past bij de museumobjecten.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

#### *Social dimension*

- o De medewerkers van TwentseWelle waren behulpzaam.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o De medewerkers van TwentseWelle vroegen mij of ik meer informatie wilde over de expositie.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik heb de medewerkers van TwentseWelle vragen gesteld over de expositie.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o De medewerkers van TwentseWelle gaven mij interessante informatie.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik had last van andere bezoekers.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Het was te druk in de expositieruimte.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

#### *Socially symbolic dimension*

- o Ik voelde mij thuis bij TwentseWelle.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik voel mij verbonden met TwentseWelle.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik voel mij verbonden met de regio Twente.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik heb meer geleerd over de regio Twente.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik voel mij een trotste Twentenaar wanneer ik door TwentseWelle loop.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

- o Ik vond het leuk om meer te leren over de geschiedenis van Twente.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

### **Loyalty**

Mijn bezoek aan TwentseWelle is positief.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

Ik zal anderen TwentseWelle aanraden.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

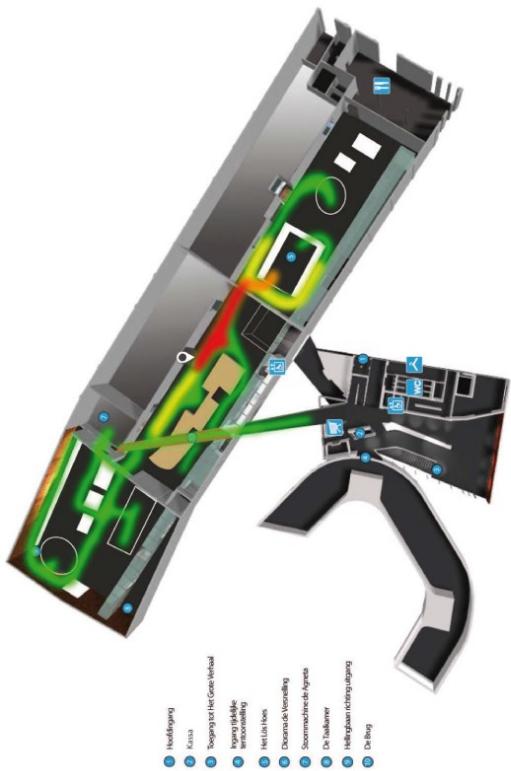
Ik zal TwentseWelle nogmaals bezoeken in de toekomst.

Helemaal mee eens o - o - o - o - o Helemaal mee oneens

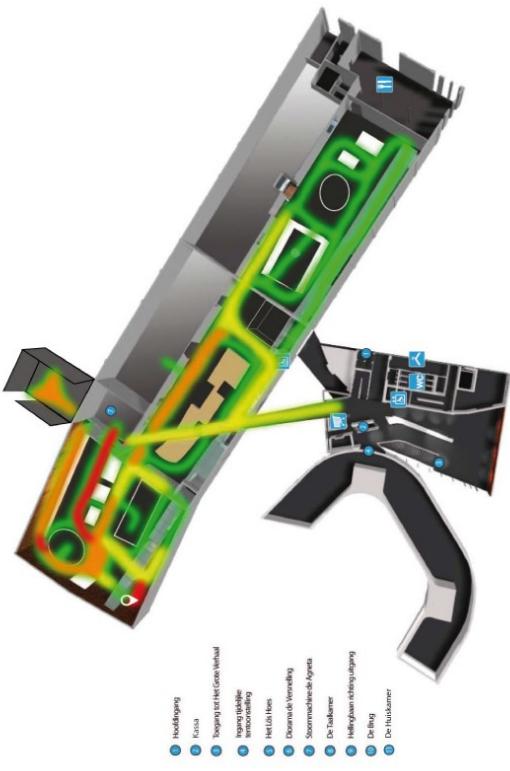
Op een schaal van 1 tot 10 beoordeel ik TwentseWelle met een .....

## Appendix C

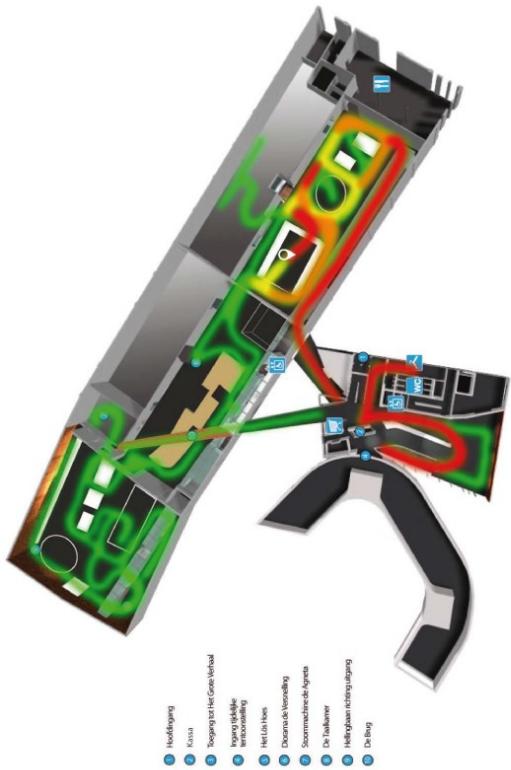
### Heatmaps of male participants



TwentseWelle



TwentseWelle



TwentseWelle



TwentseWelle

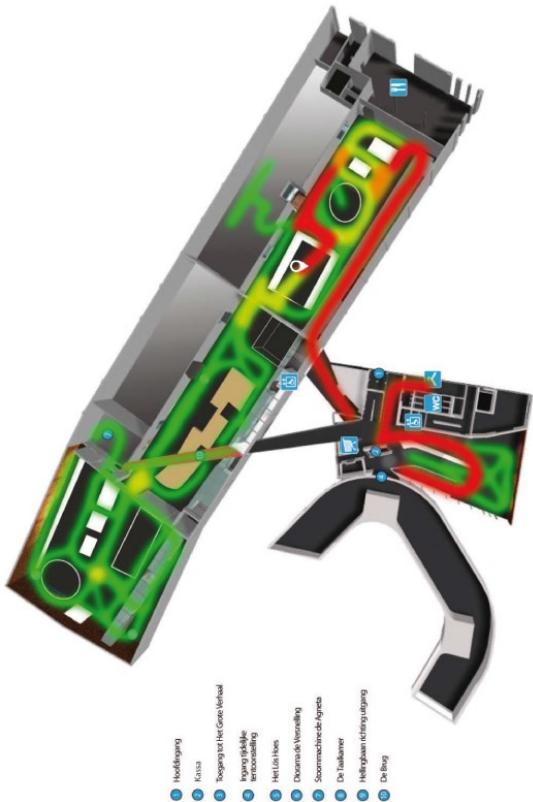
## Heatmaps of female participants



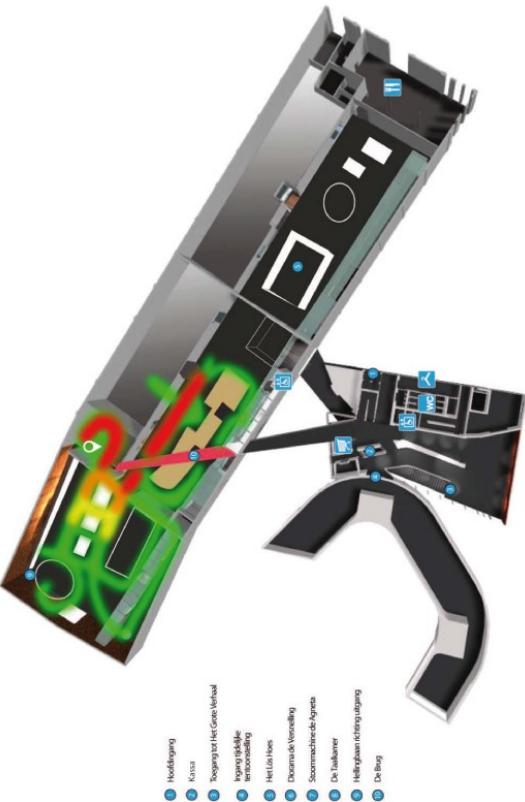
TwentseWelle



TwentseWelle

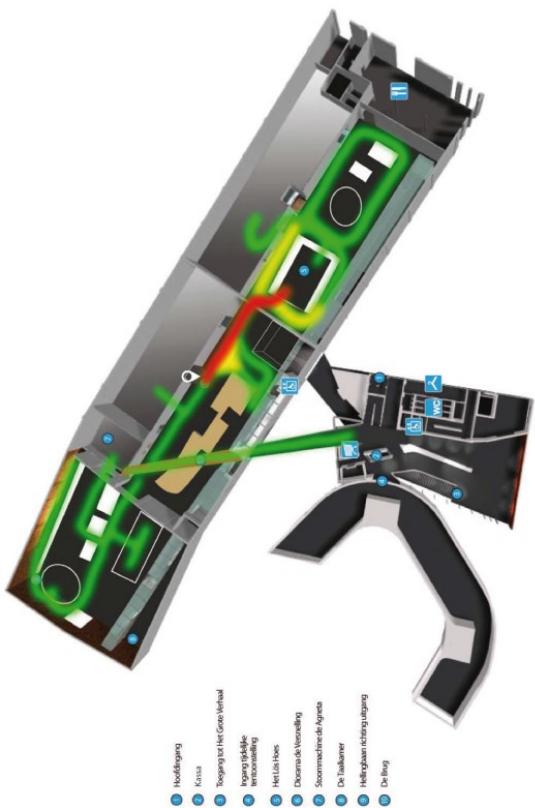


TwentseWelle



TwentseWelle

## Heatmaps of participants with a positive museum experience



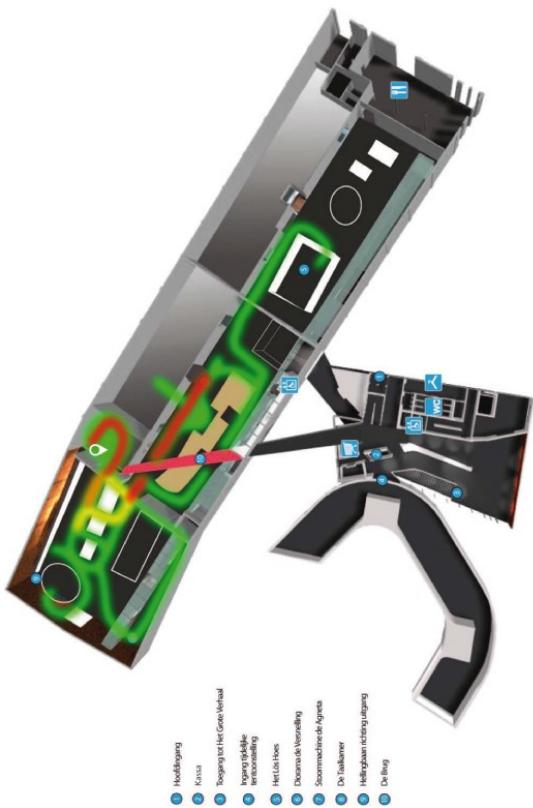
TwentseWelle



TwentseWelle



TwentseWelle



TwentseWelle

## Heatmaps of participants with a negative museum experience



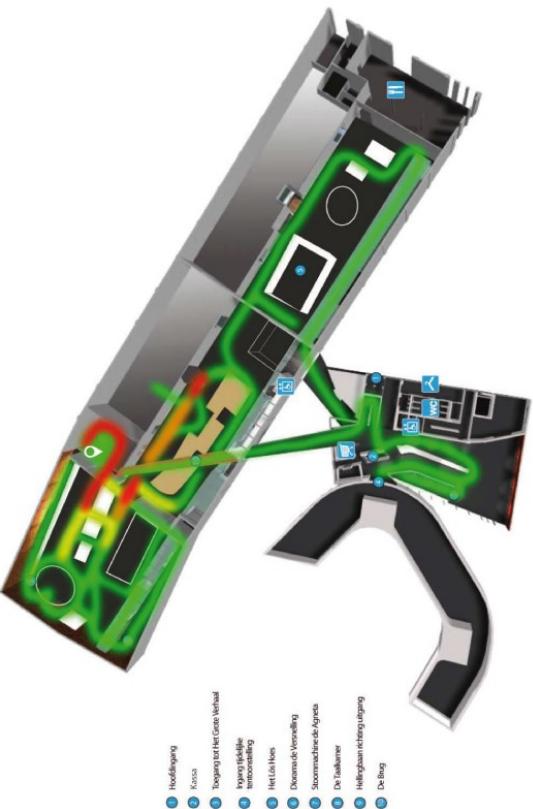
TwentseWelle



TwentseWelle

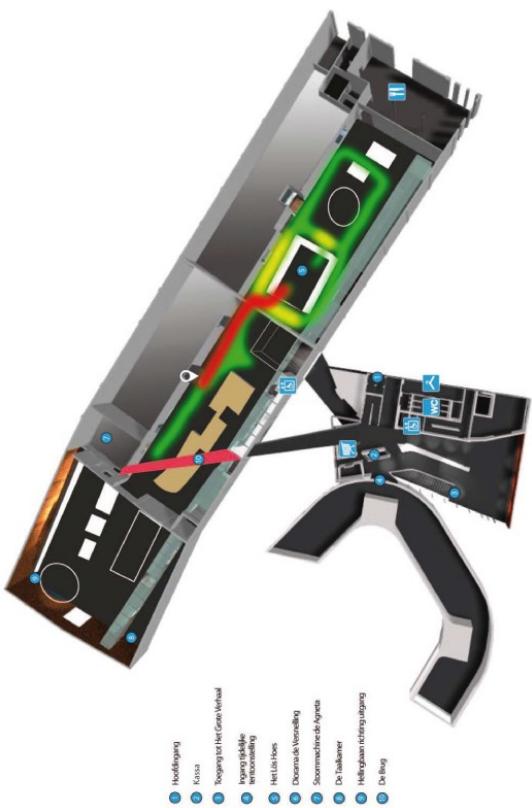


TwentseWelle



TwentseWelle

## Heatmaps of Explorers



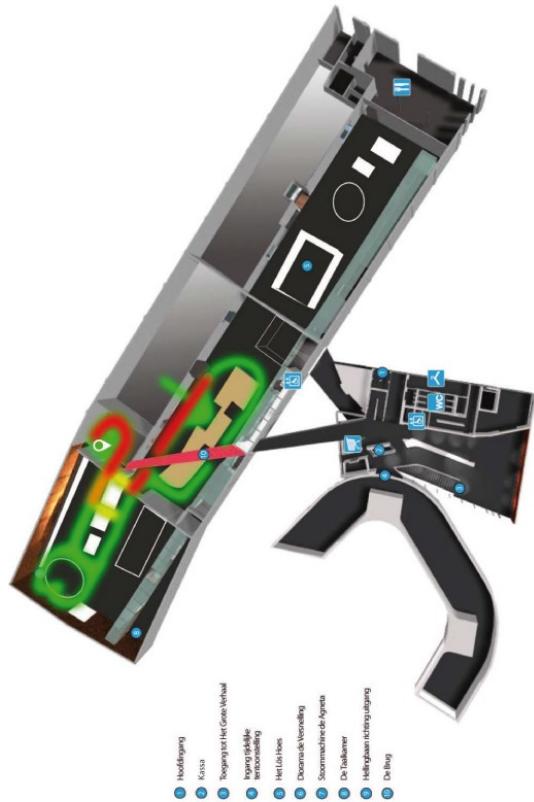
TwentseWelle



TwentseWelle

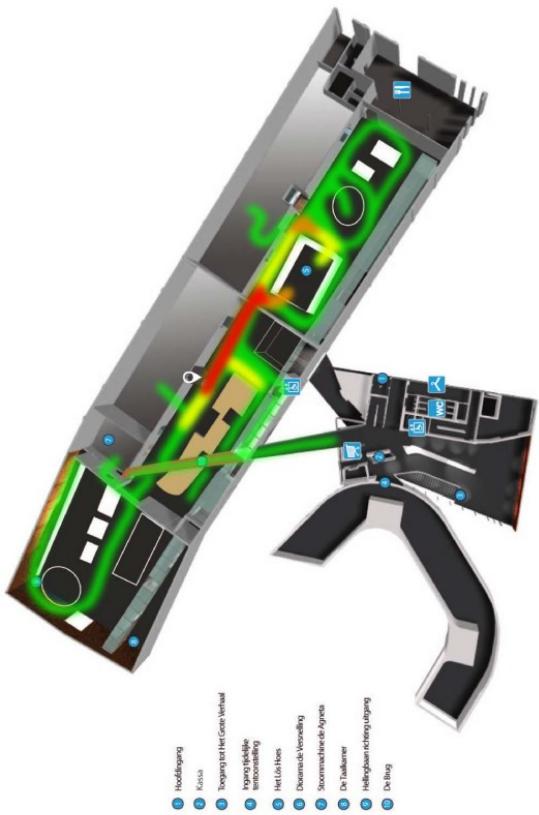


TwentseWelle



TwentseWelle

## Heatmaps of Facilitators



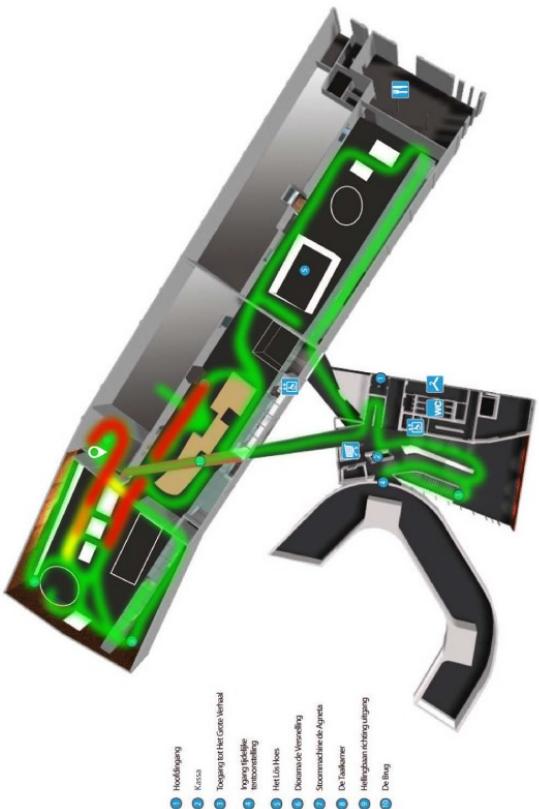
TwentseWelle



TwentseWelle



TwentseWelle



TwentseWelle

## Appendix D

### Results of the free association technique by the groups *visitor experience* and *identity-related profiles*

**Table 34**  
Difference between positive and negative participants on free association before way-finding task

	Positive		Negative	
	N	%	N	%
Museum	9	56	13	77
Twente	11	69	11	65
Family	6	38	7	41
Enschede	5	31	3	18
History	8	50	5	29
Animals	5	31	3	18
Roombeek	3	19	4	24
Water	3	19	4	24
Appearance	3	19	4	24
Characteristics	2	13	2	12
Learning experience	1	6	5	29
Textile	2	13	2	12
Man and Nature	1	6	2	12
Culture	1	6	3	18
Outing	0	0	1	6
Art	3	19	2	12
Prior expectations	3	19	1	6
Explore	5	31	0	0
Publicity	1	6	3	18
Known for	1	6	0	0
Acquaintance	1	6	1	6
Associations with museum	3	19	0	0
Personal thoughts	1	6	1	6
Relaxation	0	0	1	6
Social responsibility	2	13	0	0
Association with name	0	0	1	6

**Table 35**  
Difference between positive and negative participants on free association after way-finding task

	Positive		Negative	
	N	%	N	%
Museum	6	38	9	53
Twente	10	63	7	41
Family	4	25	7	41
Enschede	3	19	4	24
History	9	56	13	77
Animals	4	25	7	41
Roombeek	0	0	2	12
Dialect/language	3	19	3	18
Water	1	6	0	0
Appearance	2	13	4	24
Museumobjects	2	13	1	6
Characteristics	5	31	4	24
Learning experience	7	44	7	41
Textile	5	31	10	59
Diorama de Versnelling	3	19	0	0
Man and Nature	4	25	2	12
Culture	2	13	3	18
Utensils	2	13	3	18
History of TwentseWelle	4	25	1	6
Steam engine	2	13	3	18
Industry	4	25	7	41
Audio tour	2	13	1	6
Lös Hoes	3	19	2	12
Heritage Twente	5	31	4	24
How people used to live	1	6	3	18
Development	1	6	2	12
Outing	3	19	2	12
Visual aids	1	6	2	12
Revisit intention	1	6	1	6

**Table 36**

*Difference between Explorers and Facilitators on free association before way-finding task*

	Explorers		Facilitators	
	N	%	N	%
Museum	7	54	11	69
Twente	9	69	11	69
Family	7	54	5	31
Enschede	4	31	3	19
History	5	39	7	44
Animals	3	23	4	25
Roombeek	3	23	4	25
Water	4	31	3	19
Appearance	3	23	3	19
Characteristics	3	23	1	6
Learning experience	0	0	4	25
Textile	2	15	2	13
Man and Nature	2	15	1	6
Culture	2	15	2	13
Art	3	23	1	6
Prior expectations	2	15	1	6
Explore	3	23	2	13
Publicity	2	15	2	13
Known for	1	8	0	0
Acquaintance	0	0	2	13
Associations with museum	3	23	0	0
Personal thoughts	1	8	1	6
Social responsibility	2	15	0	0
Association with name	1	8	0	0

**Table 37**

*Difference between Explorers and Facilitators on free association after way-finding task*

	Explorers		Facilitators	
	N	%	N	%
Museum	4	31	9	56
Twente	7	54	10	63
Family	5	39	5	31
Enschede	2	15	4	25
History	8	62	10	63
Animals	4	31	5	31
Roombeek	0	0	1	6
Dialect/language	3	23	3	19
Water	1	8	0	0
Appearance	3	23	3	19
Museumobjects	2	15	1	6
Characteristics	3	23	5	31
Learning experience	4	31	9	56
Textile	8	62	5	31
Diorama de Versnelling	1	8	2	13
Man and Nature	1	8	5	31
Culture	2	15	3	19
Utensils	2	15	2	13
History of TwentseWelle	1	8	3	19
Steam engine	3	23	1	6
Industry	6	46	3	19
Audio tour	1	8	2	13
Lös Hoes	3	23	2	13
Heritage Twente	5	39	3	19
How people used to live	1	8	1	6
Development	0	0	2	13
Outing	3	23	1	6
Visual aids	0	0	2	13
Revisit intention	1	8	1	6

Results of brand personality traits by the groups *visitor experience* and *identity-related profiles*

**Table 38**

*Difference between positive and negative participants on personality traits*

	Positive		Negative	
	N	%	N	%
Informative	16	100	14	82
Eager to learn	14	88	14	82
Nice	14	88	13	77
Hospitable	11	69	11	65
Quiet / calm	11	69	10	59
Relaxed	11	69	8	47
Fascinating	10	63	8	47
Clear	10	63	5	29
Authentic	9	56	8	47
Stylish	8	50	5	29
Warm	7	44	6	35
Sleek / tight	6	38	5	29
Cosy	6	38	4	24
Dynamic	5	31	2	12
Open-minded	5	31	0	0
Spontaneous	5	31	0	0
Accurately	3	19	0	0
Light	2	13	0	0
Messy	0	0	1	6
Crowded / impression	0	0	1	6
Chaotic	0	0	1	6
Boring	0	0	0	0

**Table 39**

*Difference between Explorers and Facilitators on personality traits*

	Explorers		Facilitators	
	N	%	N	%
Informative	11	85	15	94
Eager to learn	11	85	13	81
Nice	9	69	14	88
Quiet / calm	8	62	11	69
Authentic	8	62	8	50
Hospitable	7	54	12	75
Fascinating	6	46	9	56
Clear	6	46	6	38
Stylish	6	46	5	31
Relaxed	5	39	11	69
Warm	4	31	7	44
Sleek / tight	4	31	4	25
Cosy	3	23	7	44
Dynamic	2	15	5	31
Spontaneous	2	15	3	19
Open-minded	2	15	2	13
Crowded / impression	1	8	0	0
Chaotic	1	8	0	0
Light	0	0	2	13
Accurately	0	0	2	13
Messy	0	0	1	6
Boring	0	0	0	0

## Appendix E

### Booklets children's quest



## **Appendix F**

### Added questions to questionnaire Study 2

#### **1. Jagen**

'Ga de grote ronde film binnen en beleef de wereld van 10-duizend jaar geleden. Welke geluiden heb je gehoord? Kruis ze aan.'

-Heeft u de grote ronde film gevonden? Ja / Nee

-Hoe bent u daar gekomen? Omschrijf kort hoe u daarheen bent gelopen vanaf ingang van het museum (bij de mammoet).

Kruis de stelling aan die op u van toepassing is:

- Ik zag het ronde zwarte object staan en vermoedde dat het daarbinnen moest zijn.
- Ik liep uit nieuwsgierigheid naar binnen bij het grote zwarte object en ben er per toeval terecht gekomen.
- Ik heb gebruikt gemaakt van een hulpmiddel om dit object te vinden.
- Mijn kind(eren) liep(en) al naar binnen bij het grote zwarte object en ik ben mijn kind(eren) gevuld.
- Mijn partner liepen al naar binnen bij het grote zwarte object en ik ben hem/haar gevuld.

-Welk(e) hulpmiddel(en) heeft u gebruikt om de grote ronde film te vinden?

- Medewerker
- Pijlen gevuld
- Plattegrond (achterop boekje gebruikt)
- Herkenning aan naam op de buitenkant
- Geen

Dit object was gemakkelijk te vinden. Omschrijf kort waarom wel of waarom niet.

Ja, omdat

Nee, omdat

Ik beoordeel dit object met een:

cijfer 1 t/m 10

Ik beoordeel deze opdracht uit het speurboekje met een:

cijfer 1 t/m 10

#### **2. De boerderij**

'Zoek de lades met het emmericoon. Luister naar de verhaaltjes.'

-Heeft u deze lades gevonden? Ja / Nee

-Hoe bent u daar gekomen? Omschrijf kort hoe u daarheen bent gelopen vanaf de grote ronde film.

Kruis de stelling aan die op u van toepassing is:

- De lades bevinden zich op een logische plek, ik liep er zo naartoe.
- Ik moest lang zoeken naar deze lades, maar heb ze uiteindelijk zelf gevonden.
- Ik heb gebruikt gemaakt van een hulpmiddel om deze lades te vinden.
- Mijn kind(eren) had(den) deze lades eerder gevonden dan ik.
- Mijn partner had deze lades eerder gevonden dan ik.

-Welk(e) hulpmiddel(en) heeft u gebruikt om deze lades te vinden?

- Medewerker
- Pijlen gevuld
- Plattegrond (achterop boekje gebruikt)
- Herkenning aan het icoon op de buitenkant
- Geen

Deze lades waren gemakkelijk te vinden. Omschrijf kort waarom wel of waarom niet.

Ja, omdat

Nee, omdat

Ik beoordeel deze lades met een:

cijfer 1 t/m 10

Ik beoordeel deze opdracht uit het speurboekje met een:

cijfer 1 t/m 10

### **3. Landschap**

'Kijk bij Natuur naar de voorstelling.'

-Heeft u dit object gevonden? Ja / Nee

-Hoe bent u daar gekomen? Omschrijf kort hoe u daarheen bent gelopen vanaf de 'icoon-emmer' lades.

Kruis de stelling aan die op u van toepassing is:

- Dit object bevindt zich op de route en is daardoor niet te missen.
- Ik moest zoeken naar dit object, maar heb het uiteindelijk zelf gevonden.
- Ik heb gebruikt gemaakt van een hulpmiddel om dit object te vinden.
- Mijn kind(eren) had(den) dit object eerder gevonden dan ik.
- Mijn partner had dit object eerder gevonden dan ik.

-Welk(e) hulpmiddel(en) heeft u gebruikt om de diorama Natuur te vinden?

- Medewerker
- Pijlen gevuld
- Plattegrond (achterop boekje gebruikt)
- Herkenning aan naam op de buitenkant
- Geen

Dit object was gemakkelijk te vinden. Omschrijf kort waarom wel of waarom niet.

Ja, omdat

Nee, omdat

Ik beoordeel de voorstelling Natuur met een:

cijfer 1 t/m 10

### **4. Fabriek**

'Loop naar het einde van de vitrinewand en ga de trap op. Zoek daar de 'icoon-meneer' lades. Wie was Martinus?'

-Heeft u deze lades gevonden? Ja / Nee

-Hoe bent u daar gekomen? Omschrijf kort hoe u daarheen bent gelopen vanaf de diorama Natuur.

Kruis de stelling aan die op u van toepassing is:

- De lades bevinden zich op een logische plek, ik liep er zo naartoe.
- Ik moest lang zoeken naar deze lades, maar heb ze uiteindelijk zelf gevonden.
- Ik heb gebruikt gemaakt van een hulpmiddel om deze lades te vinden.
- Mijn kind(eren) had(den) deze lades eerder gevonden dan ik.
- Mijn partner had deze lades eerder gevonden dan ik.

-Welk(e) hulpmiddel(en) heeft u gebruikt om deze lades te vinden?

- Medewerker
- Pijlen gevuld
- Plattegrond (achterop boekje gebruikt)
- Herkenning aan het icoon op de buitenkant
- Geen

Deze lades waren gemakkelijk te vinden. Omschrijf waarom wel of waarom niet.

Ja, omdat

Nee, omdat

Ik beoordeel deze lades met een:

cijfer 1 t/m 10

Ik beoordeel deze opdracht uit het speurboekje met een:

cijfer 1 t/m 10

- Omschrijf kort wat u van de speurboekjes vond.

- Heeft u nog suggesties?

Ik beoordeel de speurboekjes met een:

cijfer 1 t/m 10