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# Matching data and emotions for designing personalized digital experiences

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Digital innovations in-store are often unnecessary, unintuitive and uncomfortable and mostly make use of personal data for one-way messaging instead of meaningful interpersonal interactions. Digital initiatives are also more focused on enhancing the shopping experience (even unsuccessfully) instead of building consumer-brand relationship through an emotional brand experience. This paper introduces a new design framework which envisions a way of using personal consumer data for the design and development of in-store digital brand touch points. The aim of the framework is to improve consumers' in-store digital experience and their emotional connections with the brand. The foundational model for our framework is the Design for Emotion model developed by Pieter Desmet (2002). The model is used in a retail and branding context, and adapted to leverage the opportunities of personal consumer data in personalization strategies.

*Keywords: technology, data-driven design, design for emotions, personalization*

## 1 Introduction

The fast rise of e-commerce and digital experiences is shaking traditional retailing (Shankar et al., 2011). Ultimately, the retail channels will complement each other to satisfy the needs of the customer (Zhang et al., 2010), resulting in a seamless integrated omni-channel shopping experience (Verhoef et al., 2015). However, to survive in the omni-channel landscape and to satisfy the increasing demand of immersive experiences, retailers should strategically consider and embrace the use of smart technologies in-store (Pantano and Timmermans, 2014). Although many retailers already invest in (IT) technology in-store, several problems arise in the implementation of these technologies. First, new digital interactions do not always fulfil the needs of the customers visiting the stores. The customers generally perceive the digital store efforts as unnecessary, unintuitive and uncomfortable (Silverman and Hogan, 2016; Pantano and Viassone, 2014).



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Additionally, while literature suggests that the higher potential of integrating digital technologies in the retail experience resides in triggering 'symbolic' and 'emotional' experiences, retailers do not fully leverage this potential as their technology investments are prevalently aimed at 'efficiency in-store' (i.e. time saving technologies) (Rintamäki et al., 2007). Further research is needed to support retailers to move up the hierarchical shopping value ladder, from providing exclusively functional benefits to also addressing symbolic and emotional ones with in-store technology (Pantano and Timmermans, 2014). This is also confirmed by Ostrom et al. (2016), who, in their list of research priorities in the field of service innovation and management, prominently mention leveraging technology to enhance the customer experience and influence relationships between customers and service providers.

Finally, while personalization strategies – i.e., making use of personal consumer data - seem to be the solution to enhance customer experience, managers and retail professionals still have limited knowledge on how to apply them properly (Rust and Huang, 2014). In the marketing and retail context, personalization is often seen as a digital strategy by which companies leverage consumer data analysis and digital technology to deliver individualized messages and product offerings to current or prospective customers (Vesonen and Raulas, 2006). According to Mittal and Lassar (1996), the classical definition of personalization is the social content of interaction between companies and their customers. It concerns the manner in which companies relate to customers as people. The concept of personalization is supposed to capture this social component of interpersonal interaction (Mittal and Lassar, 1996). The current way of applying personalization seems to focus more on personalized messaging (one-way conversation) instead of creating interpersonal interactions (dialogue), as the classical definition proposed.

To sum up, although digital innovation is vital for retailers, its in-store implementation hardly reaches its potential benefits for consumer and brand experience. Furthermore, the current focus is on using personal data for one-way messaging, rather than for favouring interpersonal interactions and for delivering personalized emotional brand experiences. To address this challenge, this paper looks at how a design-driven approach for using personal data in digital interactions in-store can improve customer experience and trigger an emotional connection with the brand. Particularly, we first theoretically derive a design framework that combines the Design for Emotion model (Desmet, 2002) with the use of attitudinal data to guide the design of an in-store digital touch point that reinforces the brand experience and helps the retailer to improve its performance. To provide initial validation, the design framework is subsequently put into practice through a case study, namely the design of a new digital interaction for the in-store experience of a sports wear brand.

## **2 Designing for emotional engagement**

To develop a design approach for developing in-store digital interactions that improves customer experience and the emotional connection with the brand, deeper insights into consumer behavior are needed. Research and practice have generally used the stimulus-organism-response model (s-o-r model) to map consumer behavior in a retail setting (Pantano and Viassone, 2015). In the s-o-r model, the "s" refers to an external stimulus, the "o" represents the effect of the stimulus on human affective response, and the "r" stands for the human behavioral response (Hsieh et al., 2012). As the ultimate goal of this model is explaining a behavioral response, its use does not necessarily lead to the creation of emotional consumer-brand relationships. On the contrary, the appraisal theory developed by Scherer, Schorr and Johnstone (2001) focuses on how a (brand) stimulus ultimately leads to an emotional reaction, thus offering a more suitable theoretical framework for the focus of this paper. According to the authors, the appraisal is an automatic evaluation of the significance a stimulus has for one's personal wellbeing. The meaning (appraisal) the individual attaches to the stimulus is responsible for an emotional reaction that, in the retail context, can lead to a better customer experience.

Drawing on the appraisal theory, Pieter Desmet (2002) developed a model for emotion-driven design of new products and services. It is a basic model as it applies to all possible emotional responses elicited by human-product interaction (Desmet and Hekkert, 2007). The model identifies the three universal key variables in the process of emotion elicitation: (1) consumer concerns, (2) stimulus, and (3) appraisal.

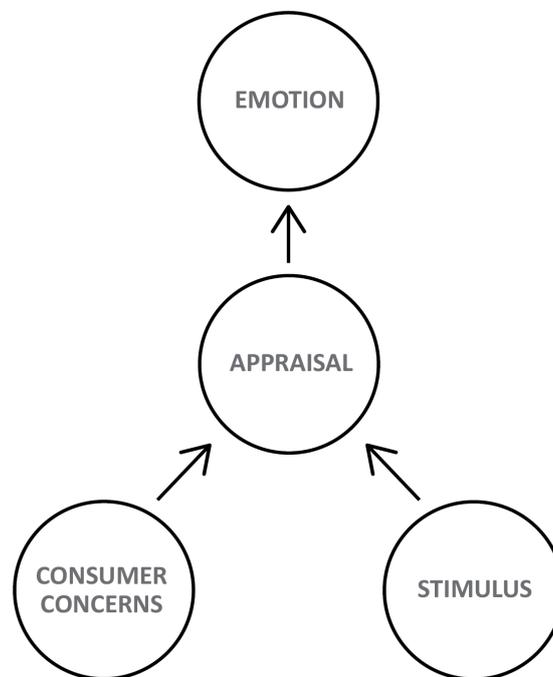


Figure 1 - Design for Emotion model (Desmet, 2002)

In order to understand emotional responses to consumer products, one must understand the users' concerns given the context in which the product is or will be used (Desmet and Hekkert, 2007). Consumer concerns reported in the research of Desmet (2002) are consumer goals, standards and attitudes. Some of these concerns are universal (safety or love), others are more personal. Additionally, just as in the appraisal theory, the model indicates that an emotion is not elicited by the product as such but by an appraised concern match or mismatch. Examples of product emotions mapped out in the model can be found in Figure 2 on the next page.

The mindset cultivated by this framework can provide guidance and structure for emotion-driven design practices. Emotion-driven design implies designing products and services with the deliberate intention to evoke predefined target emotions. After defining relevant target emotions and analyzing the consumer concerns, the right stimuli can be designed. Therefore, the model is particularly suitable for our research goal of using a design approach to develop emotionally engaging digital experiences. Targeting positive emotions stimulates product purchase intentions, repurchase intentions and product attachments (Desmet, 2012). As designers should not limit themselves to target generalized pleasure as emotion, Yoon, Desmet and Pohlmeier (2013) offer a broad palette of diverse positive emotions - e.g. pride, contentment, desire and hope -, which have been initially identified in the context of product design, but can be elicited in any context and experience (e.g., interaction with people, events) (Desmet, 2002). Therefore, the Design for Emotion model can be used for a broader range of stimuli. In the context of designing in-store digital touch points, emotions can be targeted strategically, in line with the brand image, to trigger consumers' emotional engagement with the experience and the brand itself.

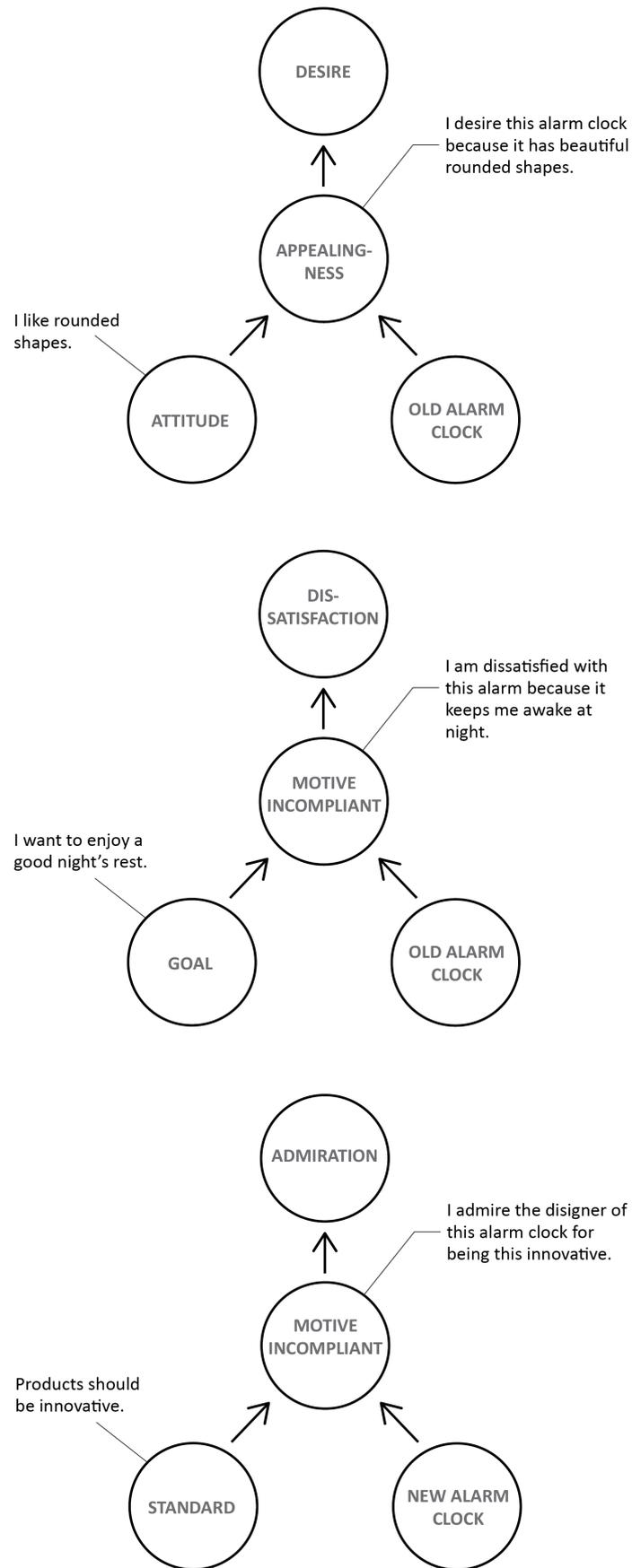


Figure 2 – Examples of filled in Design for Emotion Models (Desmet, 2002)

### 3 Designing with consumer data

To use an emotion-driven design approach for creating engaging in-store experiences, retailers should gather and analyse data on consumers' personality, as the personality has influence on the emotional consumer-brand relationship (Robins, Caspi, and Moffitt, 2000).

Nowadays, retailers are able to collect an enormous amount of data from their consumers through online channels and in-store digital initiatives. These data sets can be characterized as 'big data', since they are increasing in volume (amount of data), velocity (speed of data in and out) and variety (range of data types and sources). Nowadays the unprecedented volume, velocity, and variety of primary data is specifically available from individual consumers, resulting in the so-called Big Data revolution (Erevelles et al., 2016). Integrating the data of online channels and other customer touch points can give firms a more holistic view of their customers (Danna, 2002). But like any new technology, IT technologies for personalization practices are not error proof and are still mainly based on a data-driven approach to personalization. Accordingly, data is collected first, or is already available. Subsequently, consumer profiles are built from the collected data and used for personalization practices. Such profiles are based on past information and might emerge as an unreliable guide to future behaviours, emotions and experiences (Danna, 2002). Similarly, Kunz et al. (2017) state that a significant challenge of big data for customer engagement is the difficulty of collecting and reconciling customer data from a variety of channels and on a variety of topics, like relating to customer identity, profile, engagement history, preferences, decision-making and consumer behavior.

To circumvent these problems, Adomavius and Tuzhilin (2005) propose an alternative process-oriented perspective on personalization technologies, namely the goal-driven methodology. The personalization process should start with defining the project goal. Based on that, relevant data should be collected, in order to build relevant comprehensive consumer profiles for designing specific kinds of personalized experiences.

If we apply the goal-driven methodology to the context of this research, then the goal is to use personal data for understanding customers' personalities, to design personalized in-store digital experiences that create emotional connections. According to Hollander (1967), personality is a layered structure (see figure 3). The *psychological core* is the centrepiece of the personality, is constant over time, and is indicative of what the person is 'really' like. It includes attitudes, goals, values, interests, motives, and beliefs about the self. The *typical response* is the usual manner in which the consumer responds to different environmental situations. *Role-related behaviour* is the most superficial aspect of personalities, as it is most influenced by the environment.

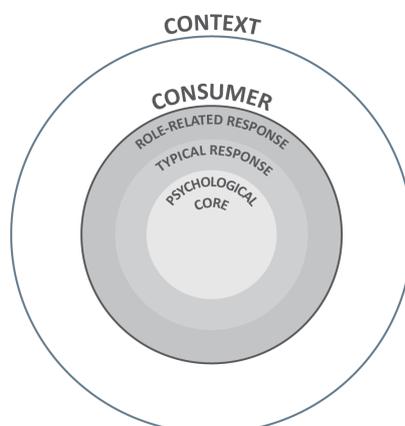


Figure 3 - Personality Framework (Hollander, 1967)

Using Hollander’s perspective, the psychological core is the most important part for retailers to understand to be able to connect with the customers on an emotional level. Attitudinal data (i.e., data on opinions, needs and desires as opposed to behavioural data or demographic data) is therefore the most interesting to use in personalization strategies, as it also reflects opinions, lifestyle characteristics or personal values of the consumer (Rud, 2001). Attitudinal data can be used to gain insight into the psychological core of the consumer. During the design process, research should be conducted to define what kind of attitudinal data is relevant to measure and use in the retail and brand’s context, to create the desired emotional connection.

#### 4 Connecting the dots and deriving a design framework

Based on the previous insights, a new design framework is developed and shown in figure 4. This design framework envisions a way of using personal attitudinal data of the consumer in a retail context, to build in-store digital experiences that engage customers at an emotional level. To reach this goal, the foundational model remains the Design for Emotion model (Desmet, 2002). The digital touch point in-store is seen as stimuli in the emotion-eliciting process. However, the touch point should be designed deliberately to elicit target emotion(s) and, at the same time leverage attitudinal data of the consumer. So attitudinal data should go back and forth between the consumer and the stimuli, to tailor the emotional experience towards the consumer.

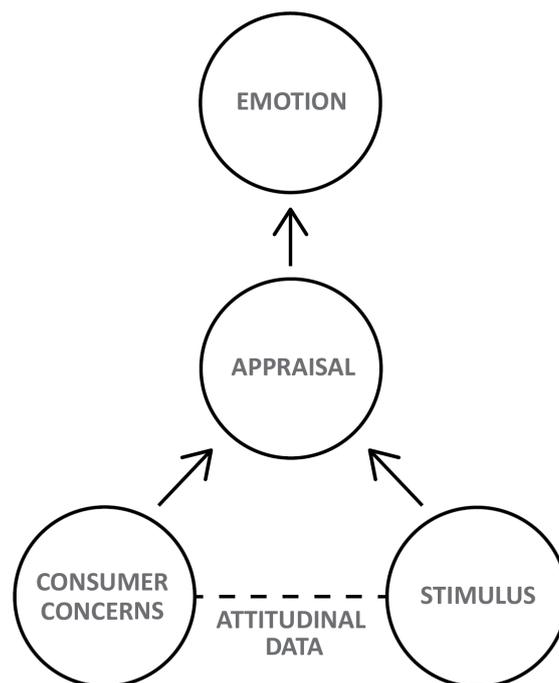


Figure 4 – The adapted design framework

The different elements of the framework (target emotions, appraisal, consumer concerns and attitudinal data) should be defined during different stages of the design process. The stimulus should eventually support its iterative execution in a way that it is aligned with both the target emotion and the consumer, and makes use of the attitudinal data. Each element of the design framework and its role in the design process will be explained in more detail in the next paragraphs, by means of a case study in which the framework is put into practice.

## 5 Applying the design framework – A case study

To illustrate the application of the framework, we used the case study of designing a new in-store digital touch point to improve the customer experience for an international sport brand. The design process for developing the digital interaction included three phases (inspiration, ideation, and prototyping), each of which was driven by and iterated with the different elements of the framework. The outcome of the case was the concept of the Fitroom, a digital immersive fitting room experience making use of attitudinal data (insights in the consumer goals in sport) to tailor the communication and environment of the fitting room towards the consumer.

In figure 5, a summary of the outcomes related to the design framework is given. Each element is explained in more detail below.

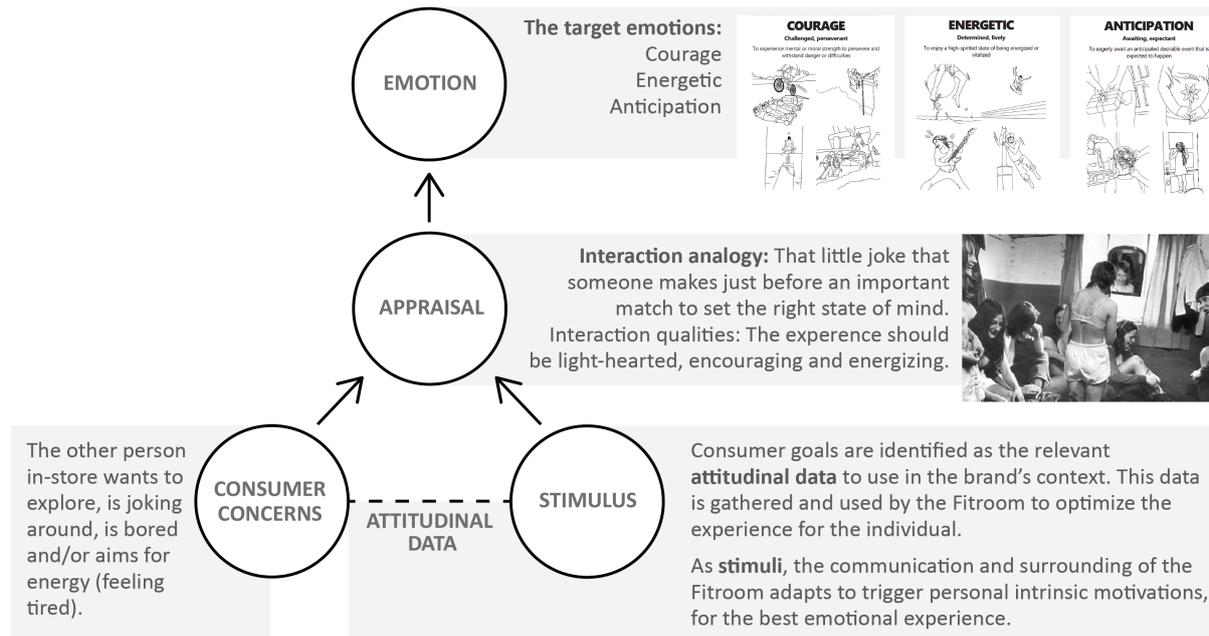


Figure 5 - Summary outcomes case-study

### 5.1 Target emotions

To foster customer engagement, the digital touch point should be designed deliberately to elicit certain target emotion(s). These target emotions should fit with the brand strategy, be distinctive from competitors, and not conflict with consumer expectations. The process started with the selection of the right target emotions, based on the insights gained during an internal analysis of the company, an external analysis of market and competitors, and targeted consumer research. External and internal experts were consulted to verify the selected emotions. Ultimately the emotions courage, anticipation and feeling energetic were chosen.

### 5.2 Appraisal

When target emotions are selected, the desired appraisal of the brand touch point can be defined. The desired appraisal could be defined as a product independent sentence (Desmet, 2002) and can take the form of an interaction vision, with an interaction analogy and interaction qualities (Pasman, Boess and Desmet, 2011). In the case study, the identified target emotions are used as inspiration to set up the interaction vision. Eventually, *'that little joke that someone makes, just before a match or an important presentation, to reduce the tension and to set the right state of mind for action'* is chosen as illustration of the desired interaction and emotional response in-store. It represents the

rich combination of the different target emotions. Jokes encourage individuals in a positive way, giving hope for success in the analogy used for the interaction vision. In the context of the in-store digital experience, a joke would energize the users and create a sense of enthusiasm for the digital experience. This results in the final target emotion, anticipation. From this metaphor, the interaction qualities are derived. The experience in the sport brand store should be encouraging, energizing and light-hearted. This can be seen as the desired appraisal of the stimuli in the 'design for emotion' model.

### **5.3 Consumer concerns**

To start the ideation phase based on the above interaction vision, a relevant target group and its specific concerns are selected. In the case study the 'other person' in-store is defined as target group. The 'other person' is the person who has not decided to go in-store but is following their friend or family member. Most of the time, this person is not really looking for something specific and is waiting. He or she is therefore not fully engaged by the sports wear brand, but still represents a potential customer. The sports wear brand can increase its consumer base by targeting this consumer group in their stores. During interviews with store visitors and workshops with those potential customers, their concerns were analysed and clustered in four main categories, namely the 'other person' in-store: 1) wants to explore, 2) is joking around, 3) is bored and/or 4) looks for energy.

### **5.4 Attitudinal data**

As proposed by the design framework, the emotional experience can be tailored towards the consumer making use of attitudinal data, thus achieving personalization in the emotional experience and individual engagement with the brand. In general, research is needed to determine which kind of attitudinal data fits a particular case. In our case study, consumer research has shown significant differences in consumer goals when engaging in sport activities. We regarded the different sports goal as relevant attitudinal data for the sports wear brand to know. Having these insights, the sport wear brand could better trigger the intrinsic motivations of individual customers, and align the digital experience accordingly. Currently, the sports brand has no relevant attitudinal data of the consumer's goals, but access to those can be achieved by leveraging other digital touch points of the same brand, or by designing the digital interaction as a data collection moment.

### **5.5 The stimulus: the digital touch point**

Based on the internal analysis, external analysis and consumer research and by making use of the design framework, the following design challenge for the in-store brand touch point was formulated; *the interaction design in the store should let the 'other person' feel courage, anticipation and energetic by triggering personal intrinsic motivations.* The setup of the Design for Emotion brainstorm workshop as described by Desmet (2002) was used as guidelines for the brainstorm sessions during the ideation phase. After multiple iterations, three concepts are chosen in line with the design challenge. The concepts were further evaluated by means of (among the rest) the consistency with the interaction vision, and one final concept was selected: the Fitroom. The interaction scenario of the Fitroom can be found on the next page, figure 6.

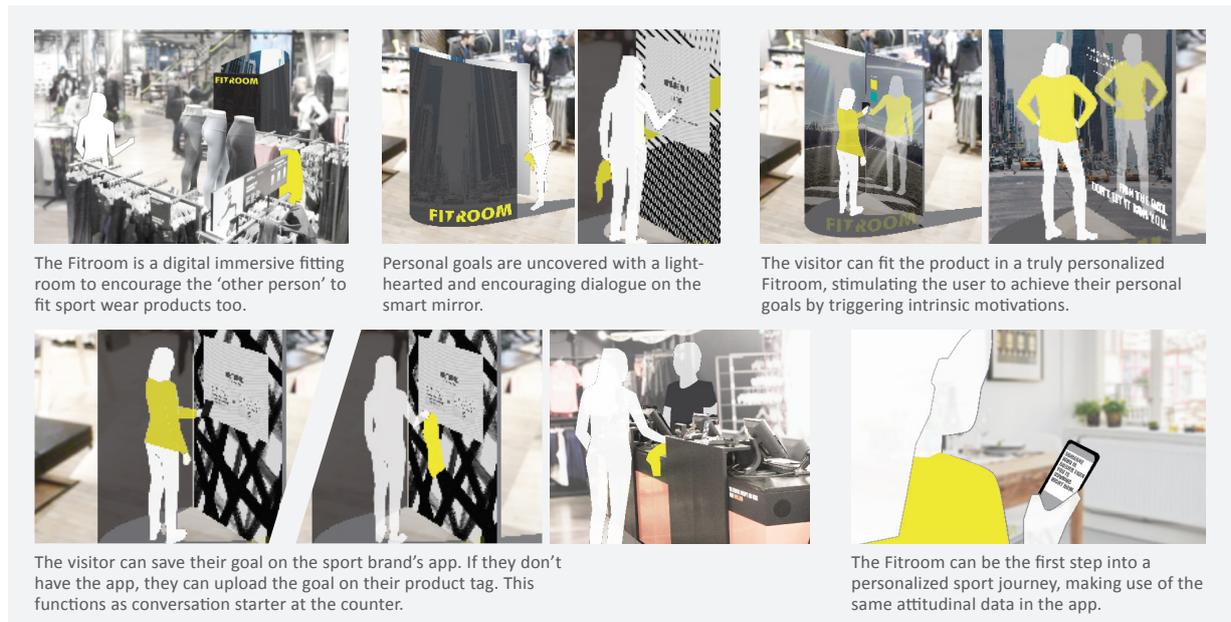


Figure 6 – Interaction scenario Fitroom

The Fitroom is a digital immersive fitting room to encourage the 'other person' to try on products too. The fitting room can be optimized making use of attitudinal data. Personal consumer goals in sports are uncovered with a light-hearted and encouraging dialogue on the smart mirror. The visitor can try the product in a truly personalized Fitroom, stimulating the user to achieve their personal goals by triggering personal intrinsic motivations. The Fitroom can be the first step into a complete personalized sport journey facilitated by the sports wear brand, making use of the same relevant attitudinal data uncovered by the Fitroom.

Rapid prototyping, including low fidelity prototypes and feedback loops, was used to receive feedback in the early stages of the development process of the dialogue on the smart mirror (figure 7). An analysis of the external communication of the sport brand's campaigns was used as input for the first version of the personalized communication on the smart mirror, with the goal of further improving and personalizing it by means of the attitudinal data received during the digital dialogue. In a later stage of concept development, qualitative feedback sessions with retail and branding experts and with potential customers have been conducted. The respondents gave feedback on the Fitroom experience by means of the interaction scenario and a digital prototype of the dialogue on the smart mirror, since further development of the Fitroom was not feasible yet. The prototyped dialogue was indeed perceived as lighthearted, as the respondents often had to laugh during the tests. Additionally, the dialogue was perceived as encouraging thanks to the included motivational messages. Based on the interaction scenario, users mentioned that the Fitroom has high potential to be seen as an immersive and energizing digital experience. Based on the positive feedback, the concept was assessed as meeting the requirements of the design challenge and the accompanying interaction qualities.



## 6 Discussion

### 6.1 Design framework evaluation

The goal of the paper was to develop a design-driven approach to integrate emotions and data in the development of engaging in-store digital experiences. We used the Design for Emotion model (Desmet, 2002) as a starting point, and integrated it with the use of attitudinal data to optimize the digital touch point and for delivering the best emotional experience.

The adapted design framework as presented in figure 4 was successfully used during the design process. Especially during the inspiration phase, the framework was useful as guidance in setting up the design challenge. Eliciting emotions in line with the brand was chosen as main goal of the in-store interaction design. This was a new approach for the stakeholders in the case study, since key performance indicators such as increase of in-store revenues were more common. During the design process, the stakeholders were engaged in the brainstorm sessions and feedback sessions. Emotion-driven design was a new approach for the participants, and was perceived as truly inspiring and innovative, triggering the willingness of using the design framework for similar projects. As a result, this case study provide evidence for the possibility of extending the applicability of the Design for Emotion methodology (Desmet, 2002) also in the context of retail, branding and design with data. The design framework can support retailers to move up the hierarchical shopping value ladder, addressing emotional values with in-store technology, instead of providing only functional benefits, as envisioned by Pantano and Timmermans (2014).

Additionally, during the design process, the goal-driven approach as described by Adomavius and Tuzhilin (2005) is applied in combination with the emotion-driven design method. During the inspiration phase, the goal of the personalized service is defined, and relevant attitudinal data (i.e., consumer goals in sports) is selected to be measured and used in the interaction design. In the Fitroom, attitudinal data are used to adjust the communication with the smart mirror in order to trigger personal intrinsic motivations. The evaluation of the concept suggests that using attitudinal data for personalizing the experience in the fitting room can lead to a better emotional response of the visitor. During feedback sessions, users were positive about the communication (motivational messages on the screen) and the fact that it could be adjusted to their personal goals. It would not have been possible to trigger personal intrinsic motivations when using e.g. behavioural personal data already available by the retailer (such as shopping history) or demographic data (such as the age of the consumer). This is in line with the proposition that attitudinal data could be used to optimize the emotional experience. Complete validation of this statement from a consumer perspective should be done through further piloting of the concept and further research, for instance by comparing the emotional responses of different kind of personalization strategies.

### 6.2 Implications

#### 6.2.1 Theoretical implications

The design framework functions as guidance in personalized emotion-driven design practices making use of consumer data. The framework can be applied when designing digital touch points, in order to build an emotional and personalized consumer-brand relationship. The framework can help retailers to deliver symbolic and emotional shopping value through technology in-store. In this way, retailers are able to move up the hierarchical shopping value ladder provided by Rintamäki et al. (2007). Additionally, the framework provides valuable help to leverage the potential of data to improve customer-firm relationships in a service context, which was needed according to Ostrom et al. (2016).

### **6.2.2 Managerial implications**

The emotion-driven design methodology for brand touch points can help as an approach when designing new in-store digital interactions with a focus on brand-related goals. By deliberately targeting distinctive emotions in line with the brand strategy, the touch point can increase emotional engagement and, subsequently, lead to a closer consumer-brand relationship. This could also be applicable to other kinds of brand touch points and in different business sectors.

As for the case-study, relevant personal attitudinal data of consumers for the sports wear brand were identified. The Fitroom is one outcome of using these attitudinal data to optimize the brand touch point in order to enhance individual emotional experience. The vision on the use of attitudinal data can be applied to other brand touch points of the sport brand too. For example, the onboarding of digital services (such as the sport applications) could start with a same kind of dialogue as on the smart mirror of the Fitroom. Additionally, the website could make use of attitudinal data as well, for example by adjusting the communication or product offering. When collecting and making use of attitudinal data, retailers do have to take legal restrictions into account (e.g., European General Data Protection Regulation, coming into effect in May 2018). The main implication of the regulations in this context is that customers have the right to access and to delete their personal data collected by the retailer. In the case of the Fitroom, these regulations will apply when the visitor saves the collected data with the sport brand's app.

### **6.3 Limitations**

The definitions in the framework can be misinterpreted, especially 'attitudinal data', as it can be interpreted from data science, psychology and design perspectives. For example, attitudinal data can be interpreted as data reflecting 'attitudes' as used by Desmet (2002). These are beliefs as 'I like...' and 'I dislike...'. In psychology, attitudes are defined as the stored feeling people have about particular people, objects, events or ideas (Zimbardo, McDermott, Jansz & Metaal, 1995). In the data science context, attitudinal data cover a broader range of data (Rud, 2002). In this framework, attitudinal data cover the same broad range of personal data as presented in data science context.

Additionally, not every brand touch point can be adjusted making use of personal data for an optimal emotional experience. Only digitally influenced brand touch points can be adjusted making use of attitudinal data. Using attitudinal data to make real-time adjustment of printed collateral or store layout to optimize individual emotional experience is not possible (although one should never say never).

Furthermore, the design framework relies on the assumption that consumers are willing to share their attitudinal data. In the case study, the attitudinal data is collected anonymously and the value of the personalized Fitroom is experienced first. Only after experiencing the direct value of the personalised service, the consumer is asked to save the data on the app account. The consumer's needs and values on sharing personal data should be kept in mind when applying the design framework (and corresponding vision) to other cases.

### **6.4 Further research suggestions**

Based on the outcomes of this paper, suggestions for further research can be listed. As mentioned before, the design solution should be validated from a consumer perspective, in order to have first-hand evidence of whether the personalized experience based on attitudinal data leads to a better emotional experience. Therefore, different personalization strategies should be compared, making use of different kind of personal consumer data.

Additionally, it should be validated from a consumer perspective whether the brand touch point designed deliberately to elicit emotions in line with the brand strategy eventually leads to a better consumer-brand relationship. This can be done through quantitative research, such as surveys.

Finally, the design framework and design methodology should be applied to other cases, to see how applicable it is for other sort of brand touch points and business sectors.

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