KEEPING UP APPEARANCES

service environments as symbolic communication

Joost W.M. Verhoeven

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SERVICE ENVIRONMENTS AS SYMBOLIC COMMUNICATION

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General Introduction:

The Role of Environmental Cues in Service Settings

In chapter one, we will first introduce the subject of this dissertation. Then we will elaborate on the role of the environmental cues in service settings. In the third part of this chapter, we will explain how and why consumers search for information prior to purchasing a service, and how they use environmental cues for this purpose. Finally, we will give an overview of the empirical studies that are reported in this dissertation.

1.1 Introduction

"All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances,
And one man in his time plays many parts." (Shakespeare, 1599)

In 'As you like it', William Shakespeare introduced the theatre metaphor to stress the importance of role playing and impression formation in interpersonal relationships. Much like audiences in a theatre, consumers in service settings form impressions of service performances and service providers. The spectators base their perceptions and evaluations on a wide variety of cues that include the performance of the actors, the plot of the play, and the costumes. In this dissertation, we are particularly interested in how consumers base their perceptions and expectations on the background or the décor against which the service is performed.

Many consumer expectations and beliefs are influenced by symbolic meanings conveyed by cues in the environment. In other words, consumers infer intangible service attributes from tangible evidence. The profound effects that the décor can have on consumer beliefs in services are best illustrated by an example:

Imagine the following situation: Because you are in need of juridical advice, you have made an appointment with a lawyer. You have never hired a lawyer before and you have never met this lawyer, so this is an unknown, new situation for you. After being invited in his office you wait for the lawyer to arrive. Even before the lawyer steps onto the stage, you take a look at his décor. You notice that his office is spacious, decorated in camel colors and tastefully furnished. After taking a seat in a comfortable designer chair, you take a closer look. The lawyer has a Jackson Pollock replica (you presume) on the wall. It is one of his paint drippings works and has loud colors. You figure the lawyer is a little eccentric. He works on the newest Apple MacBook. You take it that he is interested in design and tries to stay up-to-date with the newest trends. Furthermore, since the firm resides in an enormous villa, you infer that this law firm is of the prestigious kind and you anticipate high fees. Even before you meet the lawyer and the actual 'play' unfolds, you have perceived and interpreted numerous symbols in the service décor. The lawyer's workplace revealed much information to you, which enabled you to form a first impression

of the lead actor (i.e., the lawyer), the theatrical company (i.e., the service firm), and the play (i.e., the legal advice) even before the service provider stepped onto the stage.

Upon first contact, consumers gather information regarding the service provider, the firm and service characteristics. They use whatever cues are available: 'What do the personal marks in the office reveal about the service provider?', 'Does the environment reveal the type of service firm?', 'What kind of ambiance does the environment trigger?'. While the core product in services is intangible, many of those indirect cues are of a tangible nature (Bebko, 2000).

The notion that the service environment affects consumer perceptions and expectations has prompted many companies to invest large sums of money in their facilities. Specialized interior architects are hired for advice on how to (re-)design corporate buildings. These investments are made in the hopes that improved buildings will better support employees and attract, retain, and satisfy customers. Although it is without much doubt that consumers use and interpret environmental cues, it remains unclear precisely *how* consumers do this. In this dissertation, we will try to find answers to that question.

1.2 Environmental Cues in Service Settings

The symbolic qualities of environmental cues have not only inspired practitioners to invest large sums of money, they have also prompted academics to study the ways in which consumers are affected by environmental cues. As early as 1973, Philip Kotler emphasized the importance of the environment as a marketing tool (Kotler, 1973). He was among the first to recognize that consumers in a commercial context are greatly affected by the physical surroundings they stay in. He emphasized the sensory qualities of the environment and introduced the term 'atmospherics' to describe the effects of tangibles on customer experiences.

In the following section we will first define the service environment and environmental cues. Then we will discuss the influential servicescape model (Bitner, 1992) and present Baker's taxonomy of environmental factors (Baker, 1987; Baker, Parasuraman, Grewal, & Voss, 2002), which we will use throughout the dissertation.

Some Definitions

In this dissertation, the term "service environment" refers to the physical facility in which the service takes place (Wall & Berry, 2007). This is usually a built environment. It includes both exterior- and interior factors. However, emphasis in this dissertation is on interior elements such as furnishings, functional equipment (e.g., tools, computers etc.), lay-out (e.g., floor plan, set-up of the furnishings), and decorations. We also devote attention to fellow customers and service personnel, because these people are an integral part of the visual landscape and affect the interpretation of environmental cues. Environmental cues are defined as the elements that the service environment is made up of. This includes objects in a service environment, furnishings, but also attributes such as color, material, size or lay-out.

The Servicescape Model

The servicescape model (see Figure 1.1) was introduced to bridge the gap between environmental psychology and marketing research (Bitner, 1992). The service environment affects both customer- and employee responses, while facilitating and influencing the interaction between both parties. Since employee responses fall outside of the scope of this dissertation, we have omitted these from the model.

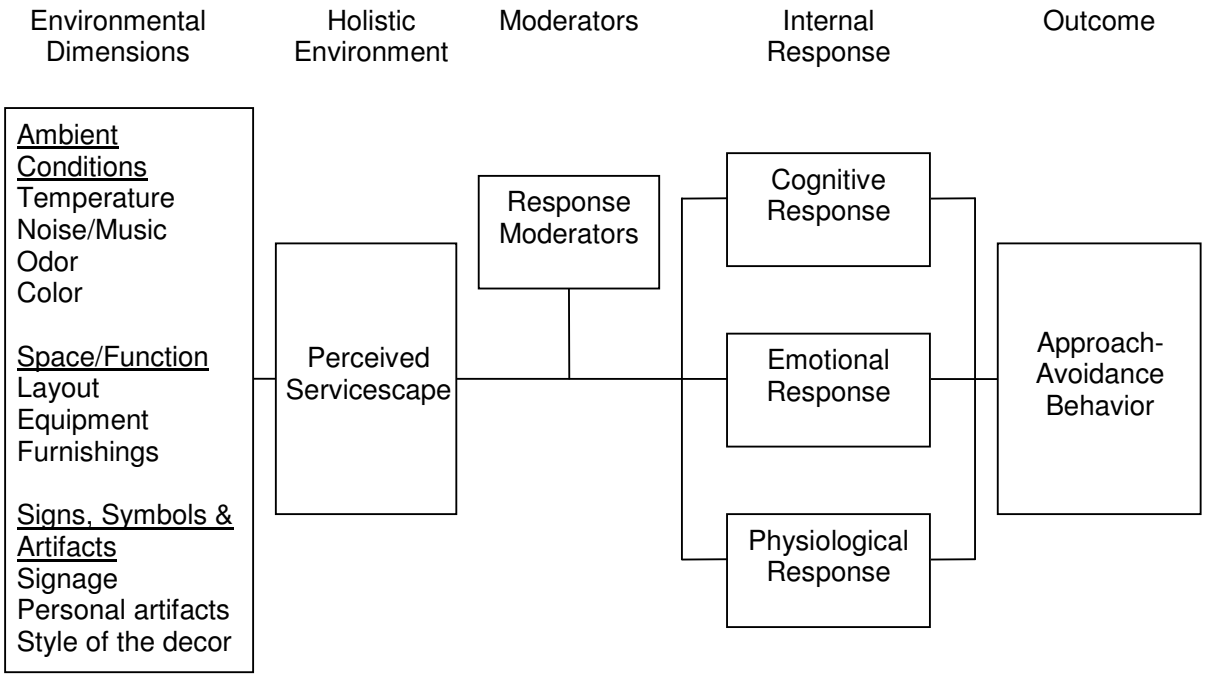


Figure 1.1: The servicescape model, adapted from Bitner (1992)

Consumers continuously perceive a wide range of environmental stimuli. Rather than perceiving these stimuli in isolation, they construct a holistic image of the firm's servicescape (Lin, 2004). In other words, people first perceive their environment as a whole, after which they differentiate the different components. Consumers respond physiologically (Griffitt, 1970), cognitively (Golledge, 1987; Rapoport, 1982), and emotionally (Babin, Darden, & Babin, 1998; Foxall & Greenley, 1999) to this image. Those internal responses simultaneously affect behaviors, and social interactions in the service setting. The three types of internal responses are obviously interdependent. For instance, the valence of a cognitive response to an environment can trigger emotions (Lazarus, 1982). When a visitor (cognitively) appraises an environment as ugly or outdated, this environment can also generate negative emotions. Similarly, affective responses can influence the course and outcomes of information processing (Pham, 1998; Tiedens & Linton, 2001). At the same time, people respond physiological to service environments: For example, environments can cause physical arousal, sweating, or stress (Bruce, Green, & Georgeson, 2003). Next, we will focus on the environmental dimensions that affect consumers in a servicescape.

Classifications of Environmental Stimuli

Various authors have attempted to classify environmental dimensions. Bitner (1992) distinguishes between (1) ambient conditions, (2) space/function, and (3) signs, symbols and artifacts. Ambient conditions refer to background characteristics. Space/function refers to the size and shapes of machinery, equipment, and furnishings and the way they are arranged. The 'signs, symbols and artifacts' dimension refers to items in the servicescape that serve as signals that communicate about the service (firm). We adopt the classification proposed by Baker (1987) and Baker, Parasuraman, Grewal & Vos (2002) and distinguish between social cues, design cues, and ambient cues. This taxonomy is adopted by many researchers throughout the servicescape literature (e.g., Brady, 2001; Sherman, Mathur, & Smith, 1997). Social cues are elements in the environment that are directly related to persons. It includes people's personal belongings, clothing, and the people themselves (e.g., their bodily appearance or faces). Design cues are elements of the environment that are visual in nature, but are not directly related to people, such as decorations, functional equipment, furniture, and layout. Ambient cues, such as noise or temperature, are intangible background characteristics. Table 1.1 provides an overview of

the abovementioned environmental dimensions. This taxonomy will be discussed further below and adopted throughout this dissertation.

Table 1.1: Baker's taxonomy of environmental features (1987).

Environmental Dimensions		
Social Factors	Environmental elements that are directly related to people	Bodily Appearance Clothing Personal Belongings Presence of others
Design Factors	Environmental elements that are not directly related to people	Decorations Objects Materials/Tools Architecture Layout Signage
Ambient Factors	Intangible background conditions	Colors Sounds Scent Air Quality Temperature Cleanliness

Social Cues

Social factors are the 'people component' of the environment (Baker, 1987; Fiske, 1993). In line with the 'extended self' approach (Belk, 1988; Tian & Belk, 2005), we propose that people's possessions are a major source of information about their identities. Therefore, we include personal possessions and one's personal 'territory' in our definition of social cues. In addition, because consumers are influenced by other people in the environment: service providers as well as fellow customers (Argo, Dahl, & Manchanda, 2005), people's appearance is also considered as social a cue. Clothing, for example, is an important social cue in the service environment (Pratt & Rafaeli, 1997). Previous research showed that the appearance of salespersons also affects customer perceptions (Babin, Boles, & Darden, 1995; Nguyen & LeBlanc, 2002). For instance, customers assign better selling skills to attractive salespersons, compared to unattractive salespeople (Reingen & Kernan, 1993). On a more general level, crowding research (Hui & Bateson, 1991; van Rompay, Galetzka, Pruyn, & Moreno Garcia, 2008) explores how the mere presence of other people in commercial settings affects consumers.

Since service delivery often primarily consists of a performance by a service provider (often an 'expert'), customer judgments of a service often depend on their impression of the service provider (Kellogg & Nie, 1995). For example, upon receiving health treatment in the hospital, patients may try to assess the specialist in order to evaluate the quality of care. Such social judgments are often based on environmental cues (e.g., competence symbols such as a framed diploma or impressive medical handbooks). Environmental cues are (by definition) interpreted as belonging to a service provider. As such, a service provider's appearance can also influence consumer beliefs.

Design Cues

Design cues are visual elements of the environments that are not directly related to persons. They include cues that make us think of what we see (Baker, 1987). Usually, the design of a space is made up of objects such as walls, windows, furniture, decorations, artwork, and functional items. In the built environment, design cues usually serve a purpose. For instance, they may be aesthetically pleasing (architectural elements, decorations) or they are important from a functional perspective (layout, furniture). However, this is not to imply that design cues are always put into place thoughtfully. Whether they are the result of deliberate action or not, design cues are very useful sources of information for consumers before purchase. For instance, in chapter 4, we will illustrate how price expectations can be based on the degree to which decorations or furniture in a hospitality setting signals prestige.

Ambient Cues

Ambient cues concern intangible background characteristics of the environment. They include visual characteristics of the environment such as lighting and cleanliness, and other characteristics that affect the senses such as temperature, ventilation, lighting, scent, and acoustics (Baker, 1986). Because color typically affects the ambiance of a space, and because the effects of color and lighting are intertwined (Birren, 1979; Calkins, 2002), we will consider color as an ambient cue rather than a design cue.

Ambient conditions are especially influential when the observer spends considerable time in the environment or when they conflict with prior expectations (Bitner, 1992). For example, one probably wouldn't even notice lighting in a space unless it is too dim, too bright, or deviates from what one would expect.

Consumers are often not totally conscious of the ambient conditions unless they become extreme (Baker, 1987). For instance, the type of music played in a supermarket can affect one's purchase behavior, without one being aware of it (North, Hargreaves, & McKendrick, 1997). In this latter study, it was found that when a supermarket played French music, consumers were more inclined to buy French wine, while they chose more German wines when German music played. Afterwards, buyers were unaware of the fact that their choices were affected by the music in the store.

In general, social, design, and ambient cues in service environments have not received much research attention. Although the service environment has been the subject of research in settings such as stores (e.g., Turley & Milliman, 2000), healthcare facilities (e.g., Dijkstra, Pieterse, & Pruyn, 2006; Ulrich, Quan, Zimring, Joseph, & Choudhary, 2004), and offices (e.g., Elsbach & Pratt, 2007), conclusive evidence with respect to environmental influences remains scarce. Some of the unanswered questions concern fundamental issues (e.g., questions regarding the processing of environmental stimuli), but many are of a practical nature (e.g., how to design an environment that reinforces a certain image). As a result, service managers still face difficulties when making decisions regarding the design of their physical surroundings. The gap in our understanding of the role of service environments is threefold (Meyers-Levy & Zhu, 2008): First, there is little understanding regarding the relative importance of environmental dimensions that influence us. Secondly, we're only beginning to understand how, why and when they exert an influence on us. Thirdly, we do not know what consequences these factors have for the evaluations and decisions that we make daily.

In this dissertation, we aim to contribute to the literature in three ways. First, we provide much-needed empirical evidence with regard to the effects of social, design, and ambient cues. To contribute to the understanding of the relative importance of environmental cues, we included a variety of factors (social-, design-, and ambient factors) in our studies. Secondly, we contribute to the understanding of *how* environments affect people, by studying the underlying meanings of tangibles that are used to form beliefs regarding service attributes. In doing so, we apply a symbolic communication perspective to environmental cues and consider the tangible environment a medium through which 'messages' or 'meanings' are transmitted. Thirdly, we do not only focus on the beliefs, expectations, or perceptions that are the immediate outcome of the symbolic

communication, but we also study how these messages affect evaluation processes and consumer decisions.

To fully understand how environmental cues are used as a medium in communication and what messages are transmitted for what reasons, one needs to understand the role of information in services.

1.3 The Role of Information in Services

Services differ from products in a number of ways (Zeithaml, Bitner, & Gremler, 2006): First, services are intangible, meaning that they consist of performances or deeds rather than objects, devices or 'things' (Bebko, 2000). Secondly, the customer 'consumes' the service while it is being performed or 'produced' (Hoffman & Bateson, 2006). For instance, a patient undergoes or 'consumes' a medical treatment the moment the physician performs it. This means that customers are usually physically present 'in the factory' throughout the service encounter and the service production process is often clearly visible for the customer. Thirdly, services are heterogeneous: Because services are human performances that are usually hard to standardize, there is always some degree of variability in service delivery. Finally, services are perishable, meaning that they cannot be stored, saved and inventoried. Consequently, supply and demand are sometimes hard to align.

These distinctive characteristics have important consequences for the availability of information, and hence for consumer experiences and service management (Sujan, 1985). Consumer decisions and behaviors are based on the information consumers have about the service prior to purchase (Erdem & Swait, 1998). Information is a valuable asset in a consumer context because it enables one to perform tasks and make decisions (Nelson, 1970, 1974; Stigler, 1961). The information consumers use to evaluate services concerns the service itself (e.g., price, service quality, procedural information), the service employee (e.g., perceived professional and empathetic qualities of the service provider), and the service firm (e.g., assigned categories, prestige, corporate culture, and image).

In early economic studies, consumers were treated as rational individuals possessing perfect information (e.g., Polinsky, 1989). In this view, the information consumers search for prior to purchase is assumed to always be available. However, Herbert Simon introduced the concept of bounded rationality to account for the fact that, in practice,

perfectly rational decisions are often not feasible due to imperfect information (Simon, 1955). Consumer information can be incomplete for two reasons (Smith & Bush, 2002): (1) because the information can only be obtained after the service has been purchased and consumed (Nelson, 1970, 1974); (2) because the information is too difficult for the consumer to interpret and use (Darby & Karni, 1973; Maute & Forrester, 1991). In the latter case, the information is available, but the consumer lacks the skills or knowledge to appraise it (Parasuraman, Zeithaml, & Berry, 1985).

Three types of service attributes are distinguished based on the availability of information. First, *search attributes* are service attributes that the consumers can determine before purchasing a product or service. Through pre-purchase information search, consumers acquire information that helps them assess the search attributes of a service offering. In other words, search attributes are verifiable before purchase. Price, procedures, and location are typically known beforehand and are therefore included in the search attributes category. Rental services (e.g., clothing- or tools rental) are often relatively high in search attributes, because one can usually hold, feel, and try out the rental object before purchase. Other attributes can only be assessed after purchase and consumption. These attributes are labeled *experience attributes* (Nelson, 1974). The information that is needed to assess these attributes can only be obtained by undergoing or experiencing the actual service delivery (Zeithaml, 1981). Services such as vacations and restaurant meals are high in experience qualities. Third, some attributes can not be readily assessed even after purchase and consumption because consumers lack the required skills or knowledge. These attributes are labeled *credence attributes* (Darby & Karni, 1973). Healthcare services and financial- or legal counseling are typically high in credence attributes.

Because services are intangible, heterogeneous, perishable, and because production and consumption are inseparable, experience- and credence attributes are prevalent in services (Zeithaml, 1981). Whereas goods can usually be more or less objectively evaluated, services offer less information because of their inherent characteristics (Smith & Bush, 2002); Whereas one can try out running shoes before purchase, this cannot be done with a taxi ride or a theatre play.

As a consequence, consumers have to deal with a considerable degree of uncertainty before purchasing a service (Zeithaml, 1981). For instance, when buying a service for the first time, it is hard to directly assess service attributes (e.g., the price of a car repair, the enjoyment of seeing a theatre play), firm attributes (e.g., organizational

culture), and to accurately predict what the service employee will be like (e.g., the heavy-handedness of a masseuse is hard to foresee). Therefore, consumers purchasing a service will always experience some risk (Laroche, McDougall, Bergeron, & Yang, 2004; Mitchell, 1999; Mitra & Reiss, 1999; Murray & Schlacter, 1990). If one perceives these risks to be high, the purchase of a service may even become a stressful event. This can be the case when investing money in stocks or when visiting a dentist or a doctor. In response, customers will use strategies to reduce the negative effects of risks. Information about service attributes can reduce uncertainty and lower anticipated risk (Cox, 1967; Smith & Bush, 2002). Therefore, consumers gather information before purchase: In choosing and using service alternatives, consumers frequently behave like detectives: They search for cues, which they organize into a set of beliefs and feelings about the offer (Berry, Wall, & Carbone, 2006). Service attribute perceptions can be established by the formation of descriptive, informational, and inferential beliefs (Fishbein & Ajzen, 1975).

First, a consumer can form beliefs about service attributes by directly observing them. These types of service attribute beliefs belong to the *descriptive beliefs*. Although in some services, trial is feasible (e.g., a fitness club), usually, consumers lack the opportunity or motivation to try out the service beforehand. Therefore, descriptive beliefs are usually not available in service choice processes (Zeithaml, 1981).

When direct observation is impossible, consumers use alternative sources of information to formulate expectations (Baker, 1986; Sullivan & Burger, 1987; Zeithaml, 1988). This information can be derived from some outside sources such as other customers (i.e., word-of-mouth), advertisements, or consumer magazines. These types of beliefs are called *informational beliefs*. A car driver may use the “Consumentengids” (i.e., the Dutch ‘Consumer Reports’) to form the belief that the ANWB road assistance service employs better mechanics than their competitors. Such informational beliefs are *directly* derived from outside sources.

Prior to purchase, a customer can form descriptive and informational beliefs about the search attributes of services. Yet, before purchase, no direct evidence is available with respect to experience- and credence attributes. Furthermore, even when direct information *is* available, consumers often behave as ‘cognitive misers’ and are not always able or motivated to search for the optimal information to base their decisions on (Cialdini, 1993). For instance, in a dry clean facility, other customers are often there to share their experiences. However, one is usually not motivated to take the effort to talk to strangers to obtain this information.

When direct information is unavailable, consumers are forced to derive so-called *inferential beliefs.* Inference theory proposes that people make intuitive inferences about the unknown on the basis of information that *is* available to them (Monroe & Krishnan, 1985; Nisbett & Ross, 1980). Inferences involve 'constructing meanings about concepts and relationships that are not explicit in the environmental information' (Peter & Olson, 2002). Inferences are derived from indirect cues in the environment (Monroe & Krishnan, 1985). A cue can be defined as any indirect informational stimulus in the environment relating to the product (Monroe & Krishnan, 1985; Steenkamp, 1989).

Prior work in the Services Marketing field explored the role of information cues in service perception (Compeau, Grewal, & Monroe, 1998; Grewal, Monroe, & Krishnan, 1998; Zeithaml, 1988). Previous research established the role of price (Dodds, Monroe, & Grewal, 1991; Kardes, Cronley, Kellaris, & Posavac, 2004), level of advertising (Kirmani & Wright, 1989), reputation (Shapiro, 1983), and warranties (Boulding & Kirmani, 1993) as information cues that affect perceptions and expectations. Likewise, a service environment offers a rich set of informational cues that consumers use to make inferences regarding services, service employees, and service firms (Baker, 1998; Baker et al., 2002; Reimer & Kuehn, 2005). For instance, a mess at a travel agency can be interpreted as a cue that employees are not fully in control, which leads consumers to attribute service failures to the travel agency rather than to circumstances (Bitner, 1990). These so-called 'environmental inferences' are based on symbolic meanings that people assign to elements of the service environment. Before elaborating on the symbolic qualities of environmental cues in chapter two, we will look forward to the studies in chapter three to six of this dissertation.

1.4 Overview of Empirical Chapters

As yet, environmental inferences have received little research attention. The studies in this dissertation are an attempt to fill this void. In **chapter 2**, we address the question how consumers make environmental inferences. In the empirical section of this dissertation, we describe a number of studies that explore environmental inferences in simulated or actual service encounters. A wide variety of inferential beliefs concerning service attributes (e.g., price, service quality), service firms (e.g., the categorization of the service firm), and service employees (e.g., his or her professional or empathetic qualities) can be based on the perception of environmental stimuli. Throughout the empirical studies,

we explore the width and richness of service beliefs that are based on environmental cues. The studies are presented in three parts. These parts correspond with Baker's taxonomy of environmental stimuli (Baker, 1987; Baker et al., 2002):

Social Cues

Part one consists of three studies on the effects of social cues on consumer cognitions. In **chapter 3**, we explore the (interactive) effects of private and professional belongings and personal appearance on patient perceptions in a patient-doctor setting. As services are comprised of actions or performances rather than tangible products, in the eyes of customers the employees delivering the service *are* the service (Zeithaml et al., 2006). As a result, the beliefs people hold about the service are often affected by the consumer's impression of the service provider. In this chapter, we explore how such person perceptions are affected by social cues in the environment.

Design Cues

The second part deals with environmental inferences that are based on design cues. **Chapter 4** addresses the effects of rather mundane functional cues in a restaurant environment on price expectations. In **chapter 5**, we explore the effects of art (rather than mundane or functional objects), and show that not just the presence of design cues per se, but the characteristics of art (e.g., vividness or level of abstraction) can serve as an environmental design cue. Such a design cue was found to affect the perceived characteristics of the firm and the expected service attributes.

Ambient Cues

In the third and final empirical part of this dissertation, **chapter 6**, we present two studies on the role of color as an ambient cue in a healthcare setting. First, we show that consumers can infer service quality from wall color. Then we will present a field experiment in which we show that, for some patient groups, the length of hospital stay can be affected by wall color.

Finally, **chapter 7** comprises a general discussion of the findings.

2

Theoretical Framework: Environmental Inferences

Chapter one provided an overview of the literature addressing the role of the tangible environment in service settings. When consumers are buying a service, they have to deal with a high level of uncertainty since they usually cannot form descriptive or informational service beliefs before service purchase. Instead, they scan the environment for indirect cues to form inferential service beliefs. In this chapter, we will illustrate how consumers use environmental cues to form inferential beliefs.

In the first section of chapter two, we will address the way in which consumers process the information derived from environmental cues. In section two, we will illustrate that these meanings lead to beliefs that go beyond what is directly visible in the environment. In the third section, we will focus on the question how environmental cues come to be associated with symbolic meanings.

2.1 Processing of Environmental Stimuli

Environmental inferences are based on the cognitive processing of stimuli in the environment. Upon perceiving their surroundings, consumers interpret the acquired information: They assign meaning to the symbols they perceive. The interpretation process can be characterized as a coarse-to-fine process (Schyns & Oliva, 1994). This implies that observers first make a coarse, holistic description of the scene, after which more detailed processing of the elements takes place. In other words, impressions are rather indistinct at first: In the first interpretation phase, one makes a quick and rough estimate of the whole. In this global processing phase, people recognize service settings and assign existing categories to the places they see (Axia, Peron, & Baroni, 1991). Based on these categories, place schemas are activated in memory. Gradually, they focus more on the details of an environment (Navon, 1977). Observers will zoom in on specific elements of the environment and interpret those.

Coarse Interpretation Processes: Scene Recognition

Humans are inclined to sort things into groups, rather than to think about them individually (Rosch, 1999). Therefore, people quickly categorize the places around them to make sense of what they see (Axia et al., 1991; Creusen & Schoormans, 2005). Environmental cues are used to categorize a service environment (Bloch, 1995; Veryzer, 1995). Consumers use the knowledge of (categories of) service organizations stored in their long-term memory to classify the service environment they encounter. Categories are internally structured into a prototype and non-prototypical members, which are more or less similar to the prototype. A prototype is the clearest case or the best example of the category (Rosch & Mervis, 1975). For instance, Starbucks is the prototypical American coffee shop. Other coffee shop chains such as Costa Coffee or Coffee Republic are members of the same category, but are not prototypical. In some respects they are like Starbucks (e.g., coffee is served in paper cups with plastic lids), in other respects they differ from the prototype (e.g., their corporate visual styles differ and the taste of their coffee differs).

When people perceive a scene, they first tend to view it holistically (Lin, 2004). Upon perception, this holistic image is automatically compared to category knowledge in memory (Ambady & Rosenthal, 1992; Friedman, 1979). Consumers usually have pretty detailed ideas of what typical service environments look like (Ward, Bitner, & Barnes,

1992). Memory about tangible settings is organized in so-called place schemas (Amedeo & York, 1990). When a consumer perceives an environment, the environment is compared to the place schemas he or she has stored in memory (Amedeo & York, 1990; Brewer & Treyens, 1981). When the new information is congruent with one's existing schema, the consumer will recognize the service provider as being of a specific type (Sirgy, Grewal, & Mangleburg, 2000); a stereotype is activated (Peracchio & Luna, 2006). In such a case, processing of environmental stimuli is relatively easy, because consumers can relate that information to a known service stereotype (Loken & Ward, 1990; Stayman & Alden, 1992). For instance, gas stations can be recognized by high flat roofs and brightly lit columns with gas prices on them. When confronted with such a configuration of stimuli, consumers will link their perception to the gas station stereotype stored in memory.

Environmental inferences can be the result of category activation: Upon activation of the gas station stereotype, a consumer will automatically infer the types of products (e.g., gas, diesel, snacks) and services (pump up tires, self-service windshield washing) that are for sale as well as the behaviors that are called for (drive up to the pump, fill the tank, and pay at the cash register). In one's long term memory, the place schema is associated with these products and behaviors. Similarly, consumers make inferences regarding service attributes and required behaviors upon the activation of more specific stereotypes: a gas station's appearance can also activate the 'premium brand' or 'discount brand' stereotype. In other words, consumers do not only categorize service environments in broad, generic classes, but they also identify the type of service firm. In such a way, environmental cues can signal types of restaurants and influence expectations and beliefs regarding price, service levels, food offering, and service quality.

Fine-Grained Interpretation Processes

However, not all tangible environments are completely congruent with existing place schemata. Some service environments are more or less unique (Babin & Babin, 2001; Ward et al., 1992). In practice, most environments will be typical to some extent, while they are atypical and unique in other respects. The perceptual information that is incongruent with stored service schemata or congruent with an unexpected schema will be processed in a second, fine-grained interpretation phase. In this phase, consumers take a closer look at their surroundings and process more detailed elements of the environment. For instance, it is in this phase that a customer may notice particular details such as decorative elements or furniture. Additional mental activity is required to make sense of such stimuli.

For instance, when an airport terminal looks like a hotel lobby, one may infer that comfort levels are unusually high in such a terminal. When an environment is not congruent with any of the known place schemata, consumers may even consider the environment as a member of its own individual class (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976). This may be the case when entering a yoga school for the first time. While environmental cues such as aerobic mats and dressing rooms activate the 'sport studio' or 'dance studio' schema, other cues such as Buddha statues and incense scent are incongruent with these schemata. After a more fine-grained interpretation of this new service environment, one may build a 'yoga school' stereotype and store it in one's long term memory. Such a fine-grained interpretation of environmental cues can yield inferences regarding service (firm) attributes.

2.2 Environmental Inference-Making

Through coarse and fine-grained interpretation processes, consumers acquire information beyond what is immediately visible. Besides perceptions that directly result from evidence in the environment, such as the appraisal of the environment (Leather, Beale, Santos, Watts, & Lee, 2003), consumers form inferential beliefs about service employees (Gosling, Ko, Mannarelli, & Morris, 2002), the service and the service firm (Baker et al., 2002). In the absence of direct evidence, this information is particularly needed when consumers form evaluative judgments. For instance, Waibel & Wicklund (1994) found that non-expert judges routinely relied on visible physical acumen markers such as clothing, physical fitness, and hair style (to the neglect of actual task performance) to judge skill level of artists, athletes, and politicians. Wicklund, Braun & Waibel (1994) found that evaluators who felt uncertain of their own competence, relied most heavily on physical markers to judge the competence of others. Next, we will focus on the inference processes that follow the processing of environmental stimuli.

Environmental inferences can better be understood through the lens metaphor (Brunswik, 1956; Gosling et al., 2002): Environmental stimuli can serve as a 'lens' through which consumers infer hidden, mostly intangible, attributes. In the following, we will discuss this lens metaphor.

The Lens Metaphor

Various cues in the service environment reflect intangible attributes that may be impossible to directly ascertain otherwise (Baker, 1998). For instance, a patient may expect a high quality of care because the hospital looks attractive. Similarly, a guest may expect a cozy atmosphere in hotel rooms because the lobby is decorated in warm colors. Usually only a small number of cues in a given scene are relevant to the goals of the perceiver; therefore, many cues are given little attention while close attention is given to others (Gifford, Hine, Muller-Clemm, & Reynolds, 2000). For instance, when assessing the quality of hotel rooms, the employees' attire may not be considered a useful lens'.

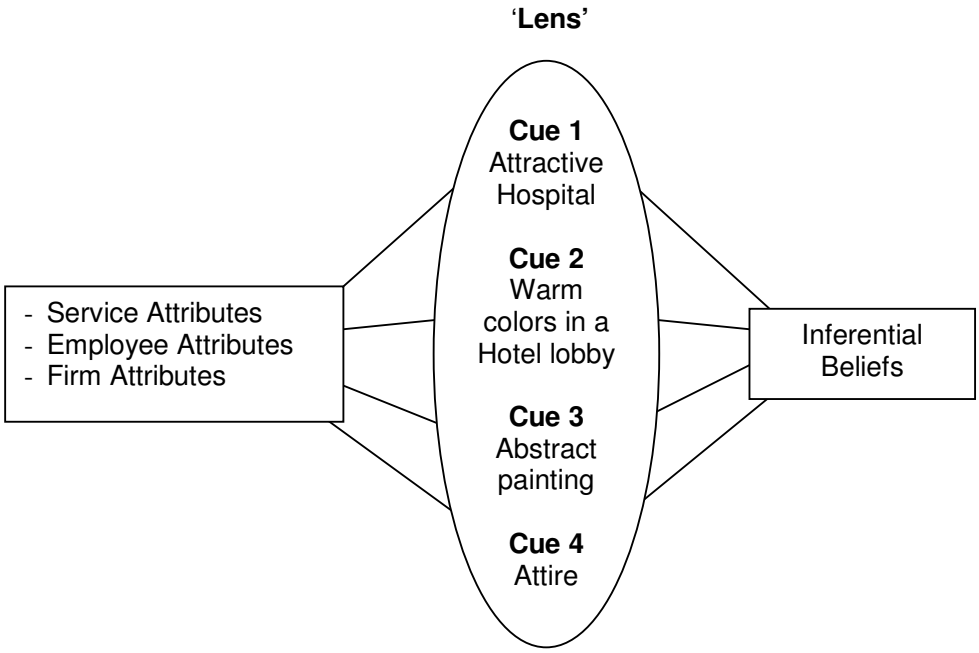


Figure 2.1: Example of the lens metaphor (adapted from Brunswick, 1956)

Like any lens, the tangible environment can provide a distorted image: Inferred attributes may not perfectly correspond with actual service attributes. A hospital may provide a poor quality of care, despite its attractive appearance. Similarly, the hotel rooms could turn out to be extremely unpleasant, despite the attractive lobby. Consumer impressions derived from cues may be distorted for two reasons. (1) Tangible cues may not represent the underlying constructs perfectly. (2) Observers may not be able to correctly select and interpret the cues that most accurately convey information about underlying service attributes (Brunswik, 1956; Gosling, Craik, Martin, & Pryor, 2005). Although the tangible environment is not always a reliable source of information, it is often used to infer service attributes (Waibel & Wicklund, 1994; Wicklund et al., 1994).

Thus far, we have not answered the question *how* people infer service beliefs from tangible evidence. In paragraph three, we will discuss the role of symbolism in environmental inference-making.

2.3 The Role of Symbols in Inferential Belief Formation

Symbolism

In this dissertation, symbolism is defined as the phenomenon that 'things' (or symbols) refer to underlying meanings. Denotation refers to the technological or functional meaning that is expressed by the form, material or colors (Umiker-Sebeok, 1987). Connotation, on the other hand, refers to the deeper hidden symbolic meanings (Umiker-Sebeok, 1987). 'Such connotative meanings influence consumers in many important ways (Creusen & Schoormans, 2005; Elliott & Wattanasuwan, 1998). The notion that symbolic meanings are contained within environmental cues has prompted many consumer researchers to study the role of symbolic value in consumer experiences (e.g., Elliott, 1999). People don't just buy goods or services because of their material utility, but rather, they consume the symbolic meanings that are embedded in the product (Belk, 1988; Elliott, 1999). Denotative meanings of tangibles generally serve two functions (Elliott, 1999). First of all, they help the owner to create, foster, and develop one's identity (Belk, 1988). Secondly, through the symbolic meanings of environmental cues, people encode messages for others. Although they may often be unaware of these processes, people communicate with one another through these symbols (Belk, Bahn, & Mayer, 1982; Elliott, 1999).

Symbolic Communication

The idea underlying symbolic communication through environmental cues is that symbolic meanings are observable and interpretable by others. After all, meaning systems are usually shared by many in a culture (McCracken & Roth, 1989). Messages that are embedded in environmental cues will be successfully communicated only if the symbolic meanings are recognized by others.

Clearly, service providers use symbols in marketing communication efforts to communicate with customers. Marketers embed symbols in adverts, corporate attire, and stationary to send messages to consumers. However, even mundane objects in the

service environment or characteristics such as shape, fabric, and color carry symbolic meanings (Kay, Wheeler, Bargh, & Ross, 2004; Smith & Burns, 1996). Naturally, these meanings will also transmit messages to consumers.

Environmental cues can be associated with symbolic meaning on the basis of (1) social conventions, (2) intrinsic qualities, or (3) the associated behaviors. Environmental inferences are the result of these three types of underlying symbolic meanings. In the following section, we will elaborate on these types of symbolic meaning.

Social Conventions

In line with semiotics (Gillespie & Morrison, 2001; Mick, 1986; Mick, Burroughs, Hetzel, & Brannen, 2004), we propose that meanings are assigned to environmental cues on the basis of widely shared social conventions (Echtner, 1999; Gillespie & Morrison, 2001). For instance, it is widely agreed on that an extensive set of silverware in a restaurant stands for luxury and high prices. Consumers can use these conventions when deciding between restaurants. Similarly, in peoples' minds, red lights behind windows stand for prostitution. Business objects such as a briefcase and a boardroom table have come to be associated with competition, and exposure to these tangibles can induce competitive behavior (Kay et al., 2004).

Social conventions are learned by the consumer through socialization as a result of exposure to advertising and media, and through interactions with others and the environment (Beardsworth & Keil, 1997). Through shared experiences and cultural exchange social conventions are transmitted and maintained (Peracchio & Meyers-Levy, 2005). For instance, we may have learned the meaning of a red light behind a window when we visited Amsterdam for the first time or when someone told you about it. Without this knowledge no such meaning transfer occurs, and no service attributes are inferred. After all, this sign may not be understood by everyone, especially for people that do not have wide access to media or in places where prostitution is not signaled by red light. In other words, social conventions enable communication because interpretations are shared by many in a culture. Such a sign system is a prerequisite for meaning-transfer (and symbolic communication) to occur.

The system of cultural meanings may also vary with time: Cultural meanings are not static, but they are under constant development (Clarke, Kell, Schmidt, & Vignali, 2000; McGregor, 2000). Objects may acquire new meanings, while other meanings deteriorate.

For example, while a hunting trophy may have stood for status and power in the 70's or 80's, in recent decades, it has changed into a symbol of cruelty and tastelessness.

Intrinsic Meanings

In the approach outlined above, tangibles acquire meaning because they refer to external entities: more or less arbitrary social conventions in the minds of perceivers. Meanings may also lie in the stimuli themselves. Meanings of tangibles can be directly perceived (Osgood, 1957). For instance, an object can express dominance by virtue of its shape (van Rompay, Hekkert, Saakes, & Russo, 2005): a high vase may be perceived as dominant because it enacts experiences in which we ourselves felt dominant when rising high above others (for instance, looking down on a crowd of people from up high). Paintings can reflect a level of dynamism and vividness by virtue of the way in which shapes and colors interact. In these examples, tangibles reflect meaning not because of some learned convention, but rather because they connect with affective experiences (van Rompay et al., 2005). In a similar way, wood is more readily perceived as warm and friendly than reflective materials because of the different ways in which both materials affect the senses (Ashby & Johnson, 2002). Furthermore, people respond to the intrinsic qualities of faces: The ability to 'read' faces and respond to them appropriately is innate rather than learned (Field, Woodson, Greenberg, & Cohen, 1982). This implies that the 'meaning' of faces lies in its intrinsic qualities, rather than in social conventions. Finally, colors carry intrinsic meanings: for instance, blue is associated with calm because of the way the color blue affects senses and brains (Birren, 1979; Valdez & Mehrabian, 1994).

Associations with Behaviors

Thirdly, consumers grant meanings to objects by virtue of the behaviors that are associated with tangibles in the environment. Environmental cues can refer to past, present or future behaviors. The association of tangibles with behaviors can be the result of their functional value: they enable certain behaviors (Veryzer, 1995). A sofa in a psychiatrist's office enables lying down, while a pen enables writing. Furthermore, people may encounter the residue of behaviors that have taken place in the setting (Gosling et al., 2002). For instance, a tidy office signals that someone has cleaned up the place. A full ashtray indicates that someone has smoked cigarettes (and that smoking is allowed). Not all those behaviors must necessarily take place inside that setting: For example, a tennis racket can signal that someone has played tennis and car keys in one's office indicate that

someone drove a certain type of car to work. Although most behavioral cues will refer to past or current behaviors, they can also refer to anticipated behaviors. Tangibles can signal what you can do with them, or what behaviors they afford (Gibson, 1979). Gibson defined affordances as the 'action possibilities' that are *latent* in the environment. Norman redefined affordances to refer to the action possibilities which are *perceived by observers* (Norman & Collyer, 2002). For example, books afford reading, spoons afford scooping, and a cup affords drinking. Behavioral meanings are influential in a service context.

Such behavioral meanings can induce inferences, and as such affect impressions of service providers, services and service firms. Some behaviors may be viewed as prototypical for certain personality traits or for certain firms. Upon perceiving behavioral meanings, one may come to believe that an occupant possesses the traits that are associated with that behavior (Buss & Craik, 1983). When perceiving golf clubs in someone's home, observers may come to believe that this person plays golf regularly, and hence is energetic, well-off, yet slightly snobbish. In a service context, service employee impressions may be influenced by behavioral meanings. For instance, the tidiness of workspaces signals how often occupants clean up, how much control they exert over the environment, or how much work they have on their hands. These tangible symbols can be used to infer how organized the occupant is and how likely it is that mistakes are attributable to this service provider (Bitner, 1990). Furthermore, behavioral meanings can provide immediate information about the procedures through which services are produced. This enables a smooth and efficient service delivery.

In chapter 2, we discussed through what mechanisms consumers can infer service attributes. In sum, environmental inferences can be the result of symbolic meanings based on social conventions, intrinsic characteristics or associated behaviors. In the following three parts of the dissertation, we will examine how symbolic meanings associated with environmental cues affect service beliefs and service evaluation. We will explore all three types of environmental cues (social, design and ambient cues) to illustrate how the symbolic communication perspective can be applied to all types of environmental cues.

Part I

Social Cues

3

Personal Belongings & Physical Appearance in the Service Environment[1]

In this chapter we will present 3 studies on consumer inferences that are based on social cues. Study 1 deals with the role of private and professional belongings in impression formation. Because consumers usually perceive personal belongings in combination with a service employee's physical appearance, in the second study, we focus on the question how consumers combine information from both sources into one meaningful impression. In the final study of this part, we will turn our attention to the type of information processing that underlies these environmental inferences. More specifically, we address the question whether environmental information is processed in the immediate stages of information processing (like physical appearance) or whether more elaborate processing underlies the effects.

[1] Study one is published as Verhoeven, J. W. M., van Rompay, T. J. L., & Pruyn, A. T. H. (2007). Let your Workspace speak for Itself: The Impact of Material Objects on Impression Formation and Service Quality Perception. In *Advances in Consumer Research* (Vol. 34, pp. 669-674). Study 2 and 3 are published as Verhoeven, J. W. M., van Rompay, T. J. L., & Pruyn, A. T. H. (2009). At Face Value: Visual Antecedents of Impression Formation in Servicescapes. In *Advances in Consumer Research* (Vol. 36, pp. 233-237).

3.1 Introduction

In the MTV Dating Show "Room Raiders", a young woman examines the bedrooms of three men to decide who she would like to go out with. Through a careful investigation of the rooms the woman tries to find out as much as possible about the tastes, hobbies, and personalities of the three candidates. Upon finding a comic book, she draws the conclusion that the guy is childish and immature, a snowboard signals that he is adventurous and sporty, while a messy room suggests that he is too lazy to clean up. Without meeting even one of them, she has formed a detailed impression of the three men and she made her decision. When she is to announce the winner, she meets the three candidates in person. Even before any interaction has taken place, she is confronted with a new wealth of information about the three men: she sees what the guys look like. However, she has already made up her mind.

This example illustrates how personal living environments and physical appearance are used as social cues. Among consumer researchers, environmental psychologists, and marketers it is well established that people surround themselves with possessions that express and reinforce their personal identity (Belk, 1988). For example, Govers and Schoormans (2005) showed that consumers prefer products whose symbolic meanings are congruent with their personality. Alternatively, one's 'displayed identity' can represent a glorified picture of the self: "*As active agents, people strive to create environments, in their own mind and the real world, that support, validate and direct desirable identity images*" (Schlenker, 1985, p. 89). Not only do people use objects as a means for self-expression, other people use such information in everyday settings to form impressions of what occupants of specific environments, such as houses, cars or offices, are like (Gosling et al., 2002).

The dating show example also suggests that the women would have rather turned to the candidates' looks when forming a personality impression, before paying attention to their personal living environments. Physical appearance seems to be perceived as one of the most accurate sources of information about the personality of others (Shevlin, Walker, Davies, Banyard, & Lewis, 2003). Zero-acquaintance studies have found that personality ratings of strangers that are solely based on exposure to physical appearance are significantly correlated with personality ratings of acquaintances (Berry, 1990; Borkenau & Liebler, 1993) and self-ratings (Borkenau & Liebler, 1992). This does not only imply that

people use physical appearance as a source of information in impression formation, but that this information, at least with respect to some personality traits, may often be fairly accurate as well (Shevlin et al., 2003).

This chapter deals with the role of social cues in service environments. In three scenario studies, we address the question how consumers infer professional and empathetic qualities of a service provider from social cues in the service environment. In the first study we address the question how consumers infer personality from personal possessions. In the second study, we studied both personal possessions and physical appearance to address the question what information prevails in personality judgments. Finally, we turned to the type of information processing that underlies environmental inferences. Because in healthcare, patients' quality perceptions typically hinge on their perceptions of the care provider (Williams, 1998), we selected a doctor's consultation room as a setting for these studies.

3.2 Environmental Social Cues

Several studies have assessed the effects of interior design on perceived traits of occupants (e.g., Tedeschi & Melburg, 1984). Cherulnik and Souders (1984), for instance, showed that occupants of high-status offices are judged as more neat, critical, sincere, intelligent, proud, responsible, ambitious and less superstitious, gullible, lazy and noisy than occupants of low-status offices. Many studies have used experimentally manipulated photos of offices. Morrow and McElroy (1981), for instance, showed that the presence of status symbols (e.g., diplomas) led to higher ratings on occupants' achievement orientation and rank. They further found that friendliness, extroversion and feelings of welcomeness in office settings in part relate to the arrangement of furniture, mirrored in an 'open' (desk against the wall) or 'closed' (desk placed between occupant and visitor) setup.

With respect to service providers, two types of qualities are particularly important: (Arneill & Devlin, 2002). First, one needs to be assured that service provider has the technical competence needed for successful outcomes (Czepiel, Solomon, & Surprenant, 1985). Second, consumers have a desire for a service provider that shows empathy and friendliness (Beck, Daughtridge, & Sloane, 2002).

In many services, competence is among the most important traits that consumers use to evaluate service employees (Czepiel et al., 1985; Gronroos, 2000). Such competence beliefs can be affected by the possessions that are displayed in the employee's personal work environment. Work environments are designed primarily for employees to perform their tasks. Professional items in their work environment enable service providers to successfully deliver the service. Therefore, we expect that in a healthcare setting, such work-related professional objects, such as medical handbooks, certificates, and models reinforce the image of a competent physician.

In service encounters, consumers usually do not only look for professional qualities, but they also desire empathetic or 'soft' qualities (Arneill & Devlin, 2002; Driver & Johnston, 2001). Since empathy is considered a primary determinant of service quality (Driver & Johnston, 2001), we will also assess friendliness perceptions in the study. By displaying personal possessions in the work environment, a service provider can express himself, not only as a professional, but also as a human being. We expect that service providers who express their hobbies and interests through their personal work environment are perceived as more open and therefore friendlier than service providers who do not.

Several studies indicate that emotions arising from interactions with personnel and the environment (Mehrabian & Russell, 1974) shape such expectations and are thus critical factors in the appraisal of service quality (Chebat, Davidow, & Codjovi, 2005; Laroche, Teng, Michon, & Chebat, 2005). In line with these studies, we propose that the effects of social cues on perceived service quality are partly driven by the emotions that are experienced by the patient.

The foregoing leads to the conceptual model depicted in Figure 3.1. This model is based on the Servicescape model (Bitner, 1992). To test this conceptual model, we conducted a scenario-experiment.

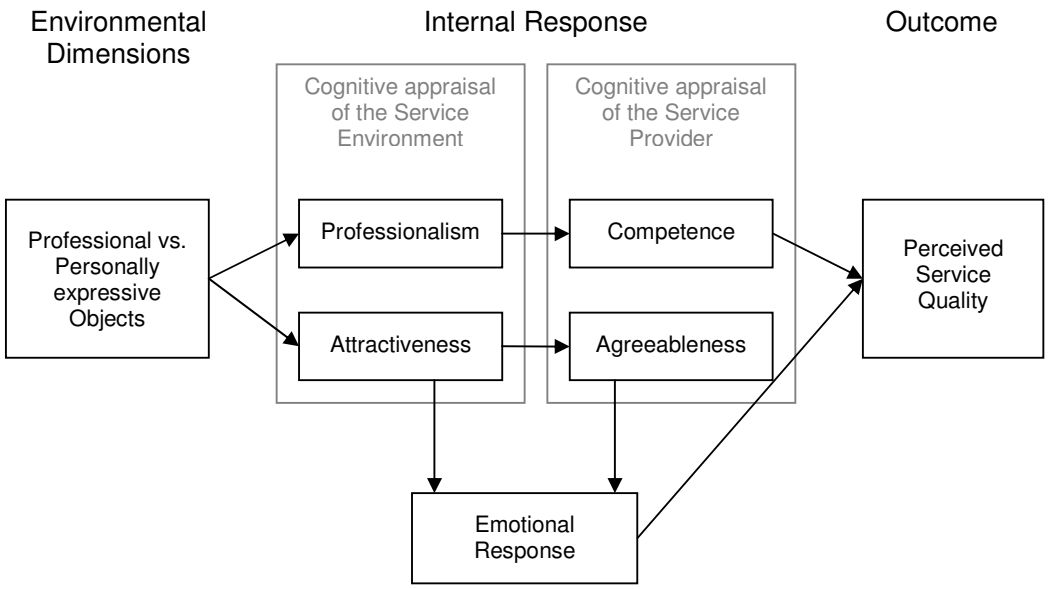


Figure 3.1: A conceptual model of consumer inferences.

3.3 Study 1

Pretest

To make an informed decision regarding the selection of stimulus materials for our study, a pretest was conducted among 54 undergraduate students (13 males, 41 females; M_{age} = 19.6; *SD* = 1.42). They were instructed to carefully watch 10 pictures of objects commonplace in a physician's office and imagine what a male physician with the displayed object in his room would be like. For each of the 10 pictures, they were asked to rate the personality of the physician on a 39-item personality scale. The questionnaire consisted of the 35 items in the Big five personality questionnaire (Goldberg, 1992) and some traits typically relevant for physicians: 'professional', 'expert', 'reliable' and 'involved'. For each of the 39 traits, participants indicated on a nine-point scale to what extent they considered these applicable to the physician. Each participant rated 10 photos of objects. In total, 20 objects were tested.

Exploratory factor analysis with varimax rotation was conducted on the 39 personality traits. Based on the total explained variance and the interpretability of the factor structure, a five factor solution was adopted. All five factors had eigenvalues greater than 1, and explained 64.6% of the variance. The following dimensions arose: Competence (e.g., professional, responsible, intelligent; Cronbach's α = .95), Agreeableness (e.g., warm,

kind, involved; Cronbach's α = .91), Extraversion (e.g., energetic, talkative, assertive; Cronbach's α = .90), Emotional stability (e.g., calm, relaxed, at ease; Cronbach's α = .83) and Creativity (e.g., imaginative, creative, curious; Cronbach's α = .73). On the whole, this factor structure resembles the structure reported by Goldberg (1992). However, some traits of the original intelligence factor ('intelligent', 'analytical' and 'reflective') and some of the added items ('professional', 'expert' and 'reliable') loaded on the conscientiousness factor, broadening the meaning of the factor to 'competence'. For this study, only the first two factors, deemed most relevant, will be discussed and elaborated on.

Out of these 20 objects, the six objects that received the highest scores on competence were selected for the professional condition: scientific articles, a medical illustration, professional handbooks, a framed master's certificate, a mockup of lungs and a mockup of respiratory tract. The six objects that scored highest on agreeableness were selected for the personally expressive condition: a miniature ship, African sculptures, toy cars, a speaker set, a soccer team shawl and a decorative hat. Interestingly, objects receiving high scores on competence received low scores on agreeableness and vice versa: an imagined physician displaying a professional object was judged as more competent ($t(53) = 16.38$, $p < .001$) and less agreeable ($t(53) = 6.09$, $p < .001$) than an imagined physician displaying a personally expressive object.

Method

A unifactorial design (with one experimental and one control condition) was employed for the purpose of this study. Participants were individually invited into the research lab. They were asked to imagine meeting a doctor in the hospital. Before the appointment, the patient was asked to wait until the doctor was ready. Meanwhile, the patient could look around in the consultation room.

Prompted by the instructions, participants next explored a QuickTime 360 degree panorama photo of a room containing either the professional objects or the personally expressive objects (see Figure 3.2). Using the mouse, participants were able to control speed and angle of presentation. After 70 seconds, the view switched to a 6-second movie presentation of a doctor stepping into the office apologizing for the wait. Subsequently participants were asked to fill out the questionnaire.

Figure 3.2: Panorama photos of the office in the personally expressive (top) the professional (bottom) condition.

To assess the impact of the experimental manipulation on participants' impressions of the physician, participants were asked to rate his personality on a computer-administered 39-item personality questionnaire (identical to the one used in the pretest). An exploratory factor analysis revealed the same factorial structure as in the pretest. Cronbach's alphas ranged from .71 for Creativity to .94 for Competence. The evaluation of the service environment was measured using a 13-item environmental appraisal scale, including the 10-item environmental appraisal scale (Bitner, 1990) and the items 'appearing friendly', 'comfortable', and 'clean'. Two factors emerged from an exploratory factor analysis conducted on these items (eigenvalues > 1) that explained 62.7% of the variance: Professional (e.g. efficient, organized, professional; Cronbach's α = .82) and Attractive (pleasant, attractive, comfortable; Cronbach's α = .92). The emotional response was assessed with a 6-item pleasure scale (Mehrabian & Russell, 1974). This scale proved to be one-dimensional and reliable (Cronbach's α = .93). An adjusted SERVQUAL questionnaire (Parasuraman, Zeithaml, & Berry, 1988) was used to determine the evaluation of the service (Cronbach's α.= .93).

Results

Analysis of variance showed that participants in the professional condition rated the office as more professional (M = 5.18; SD = 1.16) in comparison to participants in the personally expressive condition (M = 4.67; SD = 1.13, $F(1, 79) = 4.09$, $p < .05$). However, the office manipulation did not have a direct effect on perceived physician's competence ($F(1, 79) = .23$, *ns*) or agreeableness ($F(1, 79) = .55$, *ns*). The office containing

professional objects was judged as less attractive (*M* = 2.76; *SD* = 1.15) than the office containing personally expressive objects (*M* = 4.67; *SD* = 1,27; *F*(1, 79) = 7.41, *p* < .01). Consistent with the latter finding, participants in the professional condition reported to have less positive emotions (*F*(1, 79) = 5.97, *p* < .04), and a lower perceived service quality (*F*(1, 79) = 7.26, *p* < .01) than participants in the personally expressive condition.

To better understand the relationship between these variables, Structural Equation Modeling was used to test the theoretical model. The direct and indirect effects were estimated by means of path-analysis using Amos. The model shown in Figure 3.1 has a very good fit ($\chi^2(10) = 14.45$, $p = .15$, CMIN/*df* = 1.45, GFI = .96, TLI = .96, CFI = .98, RMSEA = .075). All relationships are significant at $p < .05$. Betas are displayed in Figure 3.3.

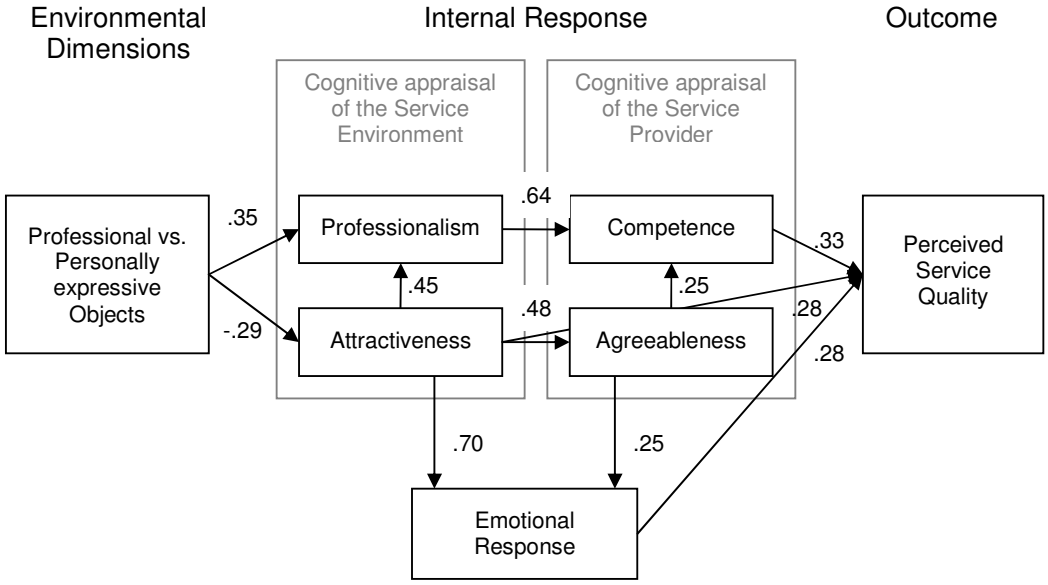


Figure 3.3: Estimated path model (standardized regression coefficients)

A positive relationship (β = .35) exists between the objects in the office and perceived professionalism of the office, indicating that the office containing professional objects is perceived as more professional than the office containing personally expressive objects. The negative relationship between the objects in the office and perceived attractiveness (β = -.29), indicates that the office in the personally expressive condition is perceived as more attractive than the office in the professional condition.

A direct relationship emerges between the two dimensions of service environment appraisal, suggesting that office attractiveness is a significant predictor of office professionalism (β = .45). Office professionalism in turn strongly affects the degree to

which the physician is perceived as competent (β = .64), whereas office attractiveness strongly affects the perceived agreeableness of the physician (β = .48). In line with our predictions, these results indicate that observers indeed project specific attributes of the environment onto the physician. It should be noted that, as was the case with the environmental attributes, the physician's personality traits are not unrelated: perceived agreeableness affects perceived competence (β = .25).

The emotional experience is greatly affected by both the perceived attractiveness of the office (β = .70) and the perceived agreeableness of the physician (β = .25). These two variables account for 73% of the variance in emotion. The significant positive relationship between perceived physician's competence and perceived service quality (β = .33) confirms our hypothesis that consumers evaluate service quality based on their impression of the service provider. The attractiveness of the service environment also directly affects service quality evaluation (β = .28). As expected, experienced emotion is a significant predictor of service quality (β = .28).

Discussion

The results of this study confirm our hypotheses with respect to personal possessions in a healthcare setting, thereby further advancing our understanding of the ways in which environmental factors impact consumer experience. In a healthcare setting, patients' needs are typically twofold (Arneill & Devlin, 2002; Laine et al., 1996). First, one needs to be assured that the care providers have the technical competence needed for successful outcomes (Czepiel et al., 1985). Second, patients have a desire for a service provider that shows empathy (Beck et al., 2002). The presented model suggests two different response 'routes' in consumers' evaluations of service encounters: a cognitive 'hard' route through which the physician's competence is assessed, and a more affect-laden 'soft' route centered on perceived friendliness or agreeableness (c.f., Driver and Johnston, 2001). Office design affects soft as well as hard service perceptions. Perceived competence was shown to be primarily affected by professionalism of the office, and thus dependent on the presence of profession-related objects. Perceived friendliness, on the other hand, was shown to be primarily affected by the attractiveness of the office. Thus, offices containing objects expressive of personal tastes and interests were perceived as more attractive and elicited a more positive emotional response in comparison to offices containing profession-related objects. Interestingly, these findings are in line with findings reported by Pruyn and Smidts (1998) indicating that perceived attractiveness of waiting rooms in healthcare

settings primarily impacts consumers' emotional response. These combined findings corroborate our assumptions that perceived attractiveness can be considered a soft attribute whereas perceived professionalism constitutes a hard attribute. The importance of such soft attributes is further underscored by the positive relation between office attractiveness and office professionalism, indicating that soft attributes and hard attributes are related.

As one would expect, in this high anxiety and high contact service, soft attributes play a greater role in service quality appraisal than hard attributes. For this reason, participants generate more favorable expectations with respect to service quality in the personally expressive condition than in the professional condition. We expect the relative importance of hard and soft attributes with respect to service quality appraisal to vary with the type of service (Cronin & Taylor, 1994; Parasuraman, Zeithaml, & Berry, 1994).

Although in study 1 the effects of specific kinds of professional and private objects were studied in isolation, in reality, possessions are usually perceived in combination with the person in question. It is the combined effects of social cues (e.g., possession and physical appearance) that gives rise to a holistic image that shapes subsequent consumer experiences (Bloch, 1995; Grove & Fisk, 1989). In other words, people are usually perceived in the context of their environments and it is the physical appearance in combination with the context that affects the impression of others (Maslow & Mintz, 1956). Therefore, in studying the effects of social cues, the tangible environment should be considered in combination with one's physical appearance. Environmental cues can complement each other in terms of the meanings they portray. Competence judgments may not only be based on the personal possessions in one's environment, but first and foremost on one's appearance. In the political domain, Todorov (1985) illustrated the far-reaching consequences of immediate competence judgments based on one's appearance: competence judgments based solely on minimal exposure to photographs of politicians significantly predicted the outcomes of elections for the U.S. Congress. Even though service encounters usually comprise rather short interactions with a service employee who is usually a stranger to the customer, customers are generally quite capable of forming a first impression based on brief exposure to employee appearance (Czepiel et al., 1985; Grandey, Fisk, Mattila, Jansen, & Sideman, 2005).

In study two, we studied the interplay between two social cues in the environment: personal possessions and physical appearance. In line with Driver and Johnston (2001), we expect that physicians will make the best impression when they express both

professional and empathic qualities, through either their appearance or personal environment. In other words, we expect that information from different cues will complement each other. This prediction was tested in study 2.

3.4 Study 2

Again, participants were asked to imagine having an appointment with a doctor in a hospital. Again, the type of possessions was manipulated by showing either personal or professional possessions in the consultation room. Because we were interested in the combined effects of possessions (personal vs. professional) and appearance, we also manipulated the appearance of the doctor by showing a photo of a doctor that looked either friendly or competent.

Pretest

To make an informed decision regarding the selection of stimulus material for study 2, a pretest was conducted among 41 students (13 men, 28 women; M_{age} = 20.0, *SD* = 1.40). They were instructed to carefully watch 10 photos of physicians. The physicians were photographed in white coats, from the waist up without any environmental features visible. Patients rated the physician's friendliness (6 items, Cronbach's α = .74) and competence (13 items, Cronbach's α = .93). We used photos of the physician (physician 1) that was rated friendly (*M* = 7.33, *SD* = .67), but relatively incompetent (*M* = 5.86, *SD* = 1.18) and the physician (physician 2) that was rated as competent (*M* = 7.28, *SD* = .84), but relatively unfriendly (*M* = 6.11, *SD* = .88). The physicians differed significantly in terms of friendliness as well as anticipated competence: $t(19) = 5.36$, $p < .001$ and $t(19) = -5.21$, $p < .001$ respectively.

Method

In the main study 77 students participated (32 men, 45 women; M_{age} = 21.0, *SD* = 2.37). Participants were randomly assigned to one of the four cells in a 2 (professional vs. personal objects) x 2 (friendly vs. competent appearance) between-subjects experimental design. They were asked to imagine having an appointment with a lung specialist in a general hospital because of respiration complaints. The patient was asked to take a seat in the consultation room and to wait for the specialist to get ready. Next, participants used a

360 degree panorama photo to look around in the room. This room contained either professional objects (such as a diploma, medical handbooks and scale models of organs) or personal objects (such as decorative sculptures, a miniature sailboat and a shawl of a sports team). After 60 seconds, participants were told the physician came in and his photo appeared on the screen. This was the physician that was rated as either friendly or competent in the pretest. Finally participants were asked to indicate to what extent they thought the physician was competent (13 items, Cronbach's α = .95), friendly (6 items, Cronbach's α = .84) and to what extent they expected to be satisfied with this physician (2 items, $r(76) = .70$). All items were scored on 7-point scales.

Results

In an analysis of variance, we found replication of the pretest results: participants rated physician 1 as more friendly ($M = 6.98$, $SD = .75$) than physician 2 ($M = 6.50$, $SD = 1.12$, $F(1,73) = 4.71$, $p < .05$). The main effect of the environmental manipulation on perceived friendliness as well as the interaction between both factors was not significant ($F < 1$). Apparently, possessions in the environment did not affect participants' friendliness-ratings.

Analysis of variance showed no significant main effects of our manipulations on perceived competence ($F < 1.4$). However, the interaction between both factors was significant: $F(1, 73) = 4.19$, $p < .05$. Analysis of the simple main effects showed that the physician with a friendly appearance was perceived as (marginally) more competent when he displayed professional ($M = 6.21$, $SD = 1.00$) rather than personal objects ($M = 5.41$, $SD = 1.68$): $F(1,37) = 3.31$, $p = .08$. The physician that looks competent, on the other hand, is judged as competent regardless of the objects he is surrounded with (professional objects: $M = 5.95$, $SD = 1.32$, personal objects: $M = 6.35$, $SD = 1.07$, $F < 1.1$).

Appearance and possessions interactively affected expected satisfaction (see Figure 3.4). Examination of the simple effects shows that patients are more satisfied with a physician that looks friendly in a professional consultation room than they are with the same physician in a room with personal possessions: $F(1,37) = 6.05$, $p = .02$. For a physician that looks competent, this effect reverses (marginally): $F(1,37) = 3.26$, $p = .08$. The main-effects of both factors are non-significant: $F < 1$.

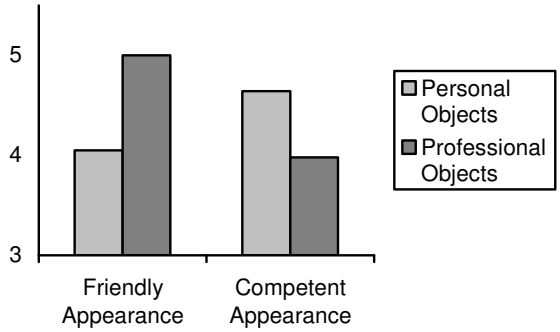


Figure 3.4: The interactive effect of physical appearance and personal possessions on anticipated satisfaction

Discussion

While in study 1, personal possessions were studied as an environmental cue in isolation, in study 2, the interplay between two types of environmental cues was at the centre of attention. In line with studies in patient satisfaction (Arneill & Devlin, 2002; Laine et al., 1996), study 2 shows that participants only expect to be satisfied with doctors when they express both their technical and their empathetic qualities. However, the way competence is inferred differs from the way friendliness is inferred. Friendliness judgments in our study are solely based on physical appearance. Alternatively, patients seem to combine information from different sources (appearance and the tangible environment) when assessing the physician's level of technical competence. Patients infer that a doctor is competent when either his appearance or his consultation room signals competence (or both).

There is a large number of factors that may be involved in the impression formation Study 2 provides us with insights as to how observers combine information from various sources into one meaningful impression: First, the effects of our manipulations on perceived friendliness show that one source of information can be dominant to the effect that influences of other sources become negligible. Observers will try to attend to those cues that they believe are most accurate for a specific trait (Brunswik, 1956). For instance, observers may believe that faces are most accurate in conveying information about personalities, whereas the tangible environment may be believed to hold cues regarding characteristics such as a person's tidiness, values and recreational pursuits (Gosling et al., 2002). Hence, when judging information derived from various sources, physical appearance may be thought of as a far more reliable indicator of friendliness than the

tangible environment. Second, and more interestingly, observers may find ways to combine information from various sources in interesting ways (Grove & Fisk, 1989). The data suggest that, by default, patients expect a doctor to be competent. However, when several cues indicate differently, the observer may conclude otherwise. This default, stereotypical belief can be so strong that a single cue (personal appearance or possessions) is insufficient to overrule this standard belief. Yet if several factors simultaneously reinforce an image that deviates from the default, an observer discards this default belief for the alternative.

Finally, when it comes to patient satisfaction, the factors seem to complement each other: participants only expect to be satisfied when physical appearance and the surroundings signal both technical and empathetic qualities (Czepiel et al., 1985). Information from both sources is combined into one meaningful impression.

When consumers are confronted with an employee, they will direct their attention toward the cues they believe most accurately describe this person (Brunswik, 1956). As study 1 illustrates, an impression may very well result from a synthesis of different sources of information. Arguably, not all information is processed simultaneously. As an observer's processing capacity is limited, there is a restricted amount of information that can be processed in the immediate stages after perception (Ambady & Rosenthal, 1992; Peracchio & Luna, 2006). In their two-stage model, Raghubir and Krishna (1996) suggest that consumer judgments are formed and framed in an initial stage, which is then followed by more conscious deliberate processing.

Previous research indicates that upon perceiving a target person, people usually incorporate information abstracted from his or her appearance in this initial stage (Todorov et al., 2005). However, it remains unclear in what stage of processing personal and professional possessions are attended to. To expand our understanding of the way observers infer personality attributes from social cues, we conducted a third study in which we focused on the type of processing that underlies the effects of social cues. When compared to physical appearance, the tangible environment seems to be perceived as a less reliable social cue, requiring more interpretation and hence more elaborate processing. Therefore, we predict that information derived from tangible environments is typically attended to in later stages of information processing. This prediction was tested in study three.

3.5 Study 3

Method

A total of 126 undergraduate students participated in a single-factor between subjects design (rapid response vs. 30 sec delay). They were confronted with two photos of physicians in their working environments (at the left and right side of the screen respectively) and they were instructed to click on the physician that they thought was the more competent of the two. The two physicians were selected from the pretest of study 2. Their appearance was rated as approximately equally competent (M = 6.83, SD = 1.11 vs. M = 6.49, SD = .95; $t(20) = 1.08$, *ns*). In each set, one of the physicians was displayed in a room with competence cues (medical handbooks and mock-ups), the other one was displayed with personal objects (decorative sculptures and a set of luxurious toy cars). The position on the screen (left vs. right) was counterbalanced. Half of the participants were instructed to choose as fast as possible. The other participants looked at the photos for at least 30 seconds and were subsequently asked to make their decision. This procedure was adopted from Todorov and colleagues (1993) to measure participants' impressions in the early stages of information processing. We omitted 11 participants from the immediate response condition whose response time was over 3 seconds.

Results

In conformance with the pretest, we found that both physicians were chosen as the more competent by an approximately equal number of participants in both the rapid response and the long exposure condition: $\chi^2(1,115) = .002$; *ns*. This confirms that both physicians looked approximately equally competent and the distribution can be attributed to chance. In the rapid judgment condition, the physician in a consultation room with competence cues was chosen as the more competent about as often as the one in the room without competence cues. In other words, competence cues in the environment are not used in rapid judgments. However, participants did use them in their more elaborate judgments (see table 3.1): When given the time to elaborate, participants overwhelmingly chose the physician in a room with competence cues as the more competent. A chi-square analysis confirmed that the choices in the elaborate condition differed significantly from the choices in the rapid condition: $\chi^2(1, 115) = 17.40$; $p<.001$.

Table 3.1: Choices between rooms as a function of length of exposure (count and row percentages)

	Consultation room without competence cues	Consultation room with competence cues	Total
t < 3 sec	28	25	53
	52.8%	47.2%	100%
t > 30 sec	10	52	62
	16.1%	83.9%	100%
Total	38	77	115
	33.0%	67.0%	100%

These results confirm the prediction that impression formation based on tangibles requires more elaborate processing. When making immediate snap-shot judgments, within the first couple of seconds after exposure to the stimuli, environmental information appears not to be processed yet: The participants who made rapid judgments did not show a preference for a physician in one environment or the other. However, when participants were given the time and opportunity to elaborately process the stimuli, they did choose the physician with competence cues in his background as the most competent one in 52 out of 62 times. The results confirm our prediction that, in contrast to physical appearance, information acquired from the perception of tangible possessions is processed in subsequent, more elaborate stages.

3.6 General Discussion

"During a consultation there are two people at work. While the doctor is searching for a diagnosis, the patient is quietly summing up the doctor. And it is often the patient who reaches his conclusion first" (Short, 1993).

In a healthcare setting, patients may feel like their faith is in the hands of strangers. In such a situation, one naturally feels the need to assess the service provider's competence level (Czepiel et al., 1985). As the results of our studies show, besides technical competence, empathic qualities are also required. Clearly, social cues in offices can convey very different 'messages' (Ornstein, 1989). People may in some situations desire to be looked upon as high-status or powerful ('hard attributes'), but at other times as involved, caring or friendly ('soft attributes'). Arguably, office professionalism impacts perceptions of physicians in terms of hard attributes whereas office attractiveness shapes

perceptions of physicians in terms of soft attributes. With respect to financial services, e.g., a bank, it may be crucial (from a managerial point of view) to foremost foster impressions of competence or professional success, whereas patients' judgments of a general practitioner may rather be based on his or her friendliness or involvement as well as the technical qualities.

Customers may turn to both physical appearances and tangible elements in the service environment to assess these characteristics but only those social cues related to physical appearance are processed in a rapid fashion. Whereas rapid judgments are made without deliberate effort on the part of the consumer, conscious processes are intentional, controllable and consume cognitive resources. The findings suggest that, when competing cues are available, this deliberate effort is needed for tangibles to affect impressions. This does not mean that individuals cannot be affected by tangibles at an unconscious level. A considerable and growing body of literature stresses otherwise (Meyers-Levy & Zhu, 2007). Kay et.al. (2004) showed that objects can prime certain constructs and consequently steer behaviors. However, our results suggest that, when competing cues are available (such as physical appearance), consumers appear to attend to the cues that they expect to be accurate first. Only later, they direct their attention to tangible cues.

Of interest with respect to prevalence of processing are models of social cognition and decision making. These models posit a distinction between unreflective effortless "system 1" processes and slow, deliberate effortful "system 2" processes (Chaiken & Trope, 1999; Kahneman, 2003). Many inferences about other people, such as those based on facial expressions, can be characterized as effortless system 1 processes (Todorov & Uleman, 2003). Interestingly, person impressions that are formed on-line in the very first encounter can affect subsequent information processing. Arguably, immediate system 1 judgments based on physical appearance can steer the subsequent encoding of environmental cues that are subject to multiple interpretations. This means that tangible competence symbols are likely to be interpreted as sincere and authentic when they are displayed by a person that looks competent, but may be regarded phony when displayed by someone who does not have a competent appearance. Likewise, system 1 processing of facial personality cues can affect the encoding of verbally expressed information or environmental cues that are interpreted in later stages.

Apart from the availability of cognitive resources, extent and elaborateness of processing of environmental cues is also likely to vary with customer involvement (Petty, Cacioppo, & Schumann, 1983). Arguably, high-involved customers are more likely to

engage in deliberate processing of various sources of information embedded in the servicescape, incorporating effects of tangible elements, whereas low involved customers are less likely to attend to these more 'subtle' or indirect sources of information. In addition, the elaboration of processing can vary as a function of dispositional differences (Kapferer & Laurent, 1985). In sum, the findings reported confirm the importance of the tangible servicescape in consumer decision-making and hint at the importance of exploring and establishing the ways in which environmental cues are processed.

Part II

Design Cues

4

The Price Façade: Symbolic and Behavioral Price Cues in Restaurants[2]

Chapter 4 deals with two studies on the role of design cues in the formation of price expectations. We propose that the presence of environmental objects can prime consumers and affect firm categorization and price expectations. In a restaurant setting, we show that table decorations and menus can serve as symbolic cues, while a buffet contains a behavioral cue. These cues are used to form price expectations.

[2] This chapter is published as Verhoeven, J. W. M., van Rompay, T. J. L., & Pruyn, A. T. H. (2009). The price facade: Symbolic and behavioral price cues in service environments. *International Journal of Hospitality Management*.

4.1 Introduction

Hospitality services are not easy to manage. Customer needs are often variable and because services cannot be pre-produced and stored, synchronizing supply and demand is often difficult (Hoffman & Bateson, 2006; Hwang & Lambert, 2008). Furthermore, because in many situations, customers are co-producers of the service, and specific tasks are assigned to them (e.g., in self-service restaurants or automatic check-in/out machines in budget hotels), providers have to facilitate customer involvement (Bendapudi & Leone, 2003; Fiorentino, 1995; Reisinger, 2000). From the consumers' perspective things do not look any easier: To make an informed decision when choosing between alternatives, consumers have to weigh input factors such as time, effort, and money against outcome factors such as the level of reliability, expertise, and the anticipated pleasantness of the service experience (Grewal et al., 1998; Oliver & Swan, 1989a). Since in hospitality services clear-cut evaluation cues are usually not available before purchase (Hoffman & Bateson, 2006; Zeithaml, 1981), consumer knowledge is typically based on expectations of service attributes (Murray, 1991; Zeithaml, Berry, & Parasuraman, 1993). These expectations are derived from indirect, extrinsic attributes (Zeithaml, 1988). For instance, brand names can be used to infer beliefs about the service (Abhijit Biswas, 1993; Ingram, 1996): Some brands may be known for high quality standards and high price levels, while others are known for their cheap products and services. However, in many cases, restaurants, cafes, or hotels are not part of such well-known chains, or some may be local brands in themselves, unknown to many consumers. In those cases, consumers cannot use brand information to infer important service attributes such as price and quality. Hence, in such situations, the tangible service environment (e.g., the interior of a restaurant or cafe) may be a rich source of extrinsic cues, and hence requires careful consideration (Bitner, 1992; Kim & Moon, 2009; Sharma & Stafford, 2000).

In considering the many antecedents of consumer decision-making, price is generally considered a key variable (Thomas & Menon, 2007; van der Rest & Harris, 2008; Yang, Kimes, & Sessarego, 2008). In the eyes of consumers, price reflects what they have to give up or sacrifice to acquire the service (Monroe & Krishnan, 1985; Zeithaml, 1988). Hence, the decision whether or not to accept a service offer is typically based on a comparison of the required sacrifice (price) with the expected benefits of the service (Bolton & Drew, 1991). As a consequence, price image is one of the key competitive tools in hospitality marketing (Cox & Cox, 1990; Danziger, Israeli, & Bekerman, 2006). For many

hotels and restaurants, price is one of the most important attributes in their positioning (Fiorentino, 1995).

However, exact price information is not always available or easy to provide, in part because prices may vary with time, or depend on variable service requirements and specifications. Furthermore, even when prices *are* available, consumers do not always pay attention to them. Rather than taking the effort to actively search for price information, consumers content themselves with indirect price cues (Zeithaml, 1982). In such cases, consumer decision making (e.g., when choosing between restaurants) is affected by price expectations rather than actual prices (Monroe & Lee, 1999).

Generally, consumers form such a price expectation the very first moment that they are faced with a service offer (e.g., when entering a cafe or restaurant, Simester, 1995; Zielke, 2006). This first impression is a pervasive one; when consumers expect a price that is out of line with their needs (e.g., when the expected price exceeds their highest acceptable price), they may not even bother to search for, or pay attention to, available price information (Mehta, Rajiv, & Srinivasan, 2003; Stigler, 1961). Furthermore, when consumers are confronted with actual prices (e.g., when looking at a menu or when informed by personnel), the processing of this new information may be biased by this initial expectation (Herr, 1989). Price expectations may also affect beliefs about other service attributes; customers may encode subsequent cues (e.g., availability of personnel, quality indicators, or authenticity cues) in a manner consistent with the initial price expectation (Helgeson & Beatty, 1987).

Given the importance of price information for consumer decision-making and positioning activities, it is evident that a thorough understanding of the ways in which consumers form price expectations is called for. However, little research focuses on the question how consumers form price expectations in hospitality settings, particularly in situations when they have not (yet) paid attention to actual price information. Environmental cues appear to play an important role in the formation of consumer beliefs (e.g., Bitner, 1992; Kim & Moon, 2009; Lin, 2004; Nguyen, 2006) and they may play a particularly influential role in price inference processes. Therefore, the present research addresses the manner in which consumers infer prices from environmental design cues.

Price Expectations

Behavioral research in economics shows that consumers may derive price expectations from past experiences (Briesch, Krishnamurthi, Mazumdar, & Raj, 1997; Zeithaml & Graham, 1983). Experience may involve the price paid on earlier encounters (Kalwani & Yim, 1992; Lalwani & Monroe, 2005), or prices of similar services (e.g., Alba, Broniarczyk, Shimp, & Urbany, 1994; Alba, Mela, Shimp, & Urbany, 1999). Moreover, price expectations may be derived from expectations regarding service attributes such as food and service quality. In addition, price expectations are greatly affected by contextual factors: For instance, consumers expect a higher price for an alcoholic consumption purchased in a fancy resort hotel in comparison to the same product purchased in a run-down grocery store (Thaler, 1985). Furthermore, price expectations may be affected by the tangible environment in which the service takes place. For instance, price expectations may arise from a generic overall assessment of the tangible surroundings (Baker et al., 2002). In this view, price expectations assimilate towards the holistic evaluation of the tangible environment; meaning that consumers will expect a higher price for a product or service in an attractive environment than in an unattractive environment. However, such relatively simple assimilation-effects cannot satisfactorily account for the manifold, sometimes subtle, influences of tangibles on price expectations.

We propose that price expectations may also result from subtle environmental cues. In line with the branding literature (Bhat & Reddy, 1998; Keller, 1993, 2003), we propose that two types of beliefs are particularly relevant to consumer decisions: symbolic and functional beliefs (see Figure 4.1). First, price expectations may result from beliefs concerning *symbolic benefits*. Symbolic benefits are extrinsic advantages of service consumption (Keller, 1993, 2003). They may include the sense of prestige, exclusivity, or fashionability of an offer (Keller, 2003; Solomon, 1983). This type of knowledge may be particularly affected by symbolic cues in the restaurant. Interior design may be a particularly useful signal as to the exclusivity and prestige of the service offering. Second, price expectations may relate to beliefs about the *functional benefits* of the service. Functional benefits refer to the intrinsic advantages of the offering (Keller, 1993). It concerns the process through which the offering is intended to fulfill the customer's needs. More specifically, price expectations may relate to beliefs about the role the customer is to play in the service realization. Such beliefs may be informed by *behavioral cues* in the service environment (Aarts & Dijksterhuis, 2003); settings that facilitate customer participation are generally associated with a lower price than full-service settings.

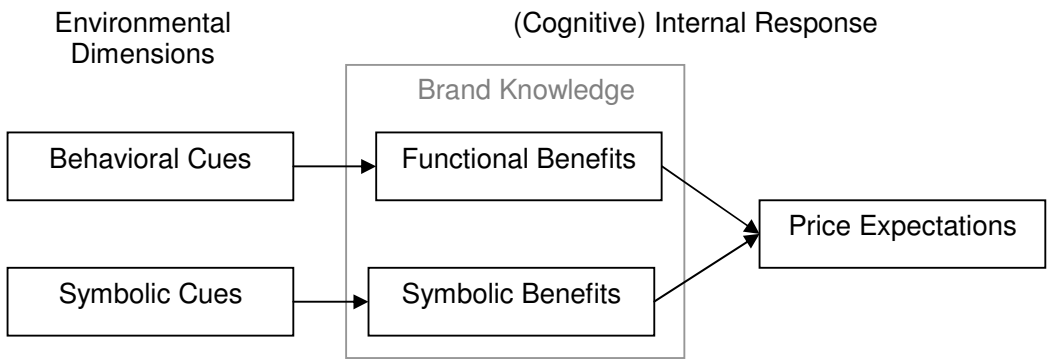


Figure 4.1: Conceptual framework

In the present chapter, we report on two studies addressing the effects of symbolic and behavioral cues on price expectations in hospitality settings. Before discussing these studies in detail, we will elaborate on the concepts of symbolic and behavioral price cues.

Symbolic Price Cues

Symbolic meanings expressed in and through the environment influence consumer perceptions to a great extent (Mick, 1986). Besides obvious examples of objects frequently used to influence symbolic benefits beliefs (e.g., works of art or decorative objects), even mundane objects in the environment, or object attributes such as shape, fabric, and color, may carry meaning beyond their immediate appearance or functioning (Kim & Moon, 2009; Lin, 2004; Smith & Burns, 1996). In short, through “object language” (Ruesch & Kees, 1964) consumers make a wide variety of inferences about the service provider, the service organization, and service prices (Grewal & Baker, 1994) that may be rather specific. More specifically, tangibles may communicate whether the service is an upscale setting or a discounter (Smith & Burns, 1996). These beliefs, in turn, may be used to form price expectations.

Generally, symbolic meanings are not static, but the result of interpretative processes and hence, subject to individual, situational, and cultural differences. Consumers learn to discern and use symbolic meanings through years of experience and interactions with objects and media. Thus, symbolic cues may trigger associations that may cause consumers to automatically and effortlessly form price expectations (Smith & DeCoster, 2000).

Textual elements such as signage, leaflets, or menus constitute one such source for communication of symbolic meanings to consumers (Yang et al., 2008). In restaurants,

menus may affect value perceptions, service knowledge, and choices (Beardsworth & Keil, 1997; Shoemaker, Dawson, & Johnson, 2005; Yang et al., 2008). The use of extensive, descriptive menu labels is rather common in the hospitality industry (Wansink, Painter, & van Ittersum, 2001). These labels may affect the extent to which a service is perceived as luxurious: The use of blatant, promotional descriptions may signal a discount image, while elaborated, descriptive labels may signal a luxurious, top-of-the-market image. These perceptions of luxury, in turn, affect price expectations. This effect is outlined in hypothesis 1.

H_1: Elaborate, as opposed to generic menu labels, positively affect price expectations. This effect is mediated by perceived luxury of the restaurant.

Elements in the tangible service environment, other than written materials, may also transmit information regarding price level through their symbolic meanings (Grewal & Baker, 1994; Smith & Burns, 1996). In the restaurant business, for instance, neon lights, promotion materials, and large windows trigger associations with fast food restaurants, whereas subdued lighting, classical music, and candle light suggest luxury, associated with an à la carte restaurant (Ward et al., 1992). Hence, just like menus, objects embedded in the restaurant environment may carry symbolic meaning, conveying information about the restaurant (Rowley & Slack, 1999). We expect that chic, rather than mundane objects (i.e., objects that convey a high rather than a low level of prestige), indicate a high level of restaurant luxury (Rowley & Slack, 1999). Consumers may use this knowledge as a price cue.

H_2: Chic objects in the restaurant environment, as opposed to casual ones, positively affect price expectations. This effect is mediated by perceived luxury of the restaurant.

Behavioral Price Cues

However, price inferences are not merely the result of beliefs regarding symbolic benefits. Because customers demand more and more tailor-made services, and organizations seek to reduce costs, customers are increasingly playing an active role in the service realization phase (Bendapudi & Leone, 2003; Fiorentino, 1995). For instance, when using automated hotel check-in machines, customers are required to play an active

role as “partial employees” (Bendapudi & Leone, 2003; Van Raaij & Pruyn, 1998). This suggests that in addition to symbolic benefits, objects may carry implicit cues signaling users as to what behaviors are appropriate or in line with situational norms and values (Kelley, Donnelly, & Skinner, 1990). From a marketing perspective, these behavioral signals have important implications because they direct consumers’ beliefs and expectations about the functional benefits of the restaurant. For example, subdued lighting conveys full service, which implies that guests are guided to their table, where they are supposed to wait for the waiter to take their order from a menu. This procedure implies that customers participate in service production and delivery to a lesser extent than, for instance, in a fast food or a buffet restaurant where lighting conditions are totally different.

Previous research focused primarily on the economic benefits of customer participation and its effects on service evaluation. For instance, customer participation in production frees up labor costs and saves money (Bendapudi & Leone, 2003; Fitzsimmons, 1985) or consumers may consider playing an active role challenging and engaging (Bateson, 1983, 1985; Meyers-Levy & Zhu, 2008). Although such effects may be desirable, we argue that perceptions of high customer input in service production may also translate into lowered price expectations. This prediction follows from equity theory which proposes that in considering the functional benefits of a service, consumers seek to maintain equity between the inputs customers and service providers bring to the service and the outcomes that they receive from it (Adams, 1965; Huppertz, Arenson, & Evans, 1978). When consumers perceive they have to contribute much effort relative to the service provider, they will perceive the exchange to be inequitable (Specht, Fichtel, & Meyer, 2007; Van Raaij & Pruyn, 1998). As the price a consumer pays is another input variable in the value equation, a customer may expect a lower price in self-service settings in comparison with situations in which they have to contribute less effort to the service delivery. In other words, consumers may expect (and consider it fair) that both the customer and the service provider benefit from the cost savings attained through customer participation (Oliver & Swan, 1989b). Therefore, hypothesis 3 states that price expectations will be lower when behavioral cues signal high customer participation, and higher when behavioral cues signal low customer participation.

H_3: An environment imposing customer participation, as opposed to an environment signaling that no participation is required, negatively affects price expectations. This effect is mediated by the amount of expected customer participation.

The hypotheses are addressed in two experiments. Study 1 focuses on the effects conveyed by two types of symbolic cues in a restaurant environment (i.e., menu descriptions and table decorations; hypotheses 1 and 2, respectively). Study 2 aims to replicate the findings concerning symbolic price cues in the tangible service setting (hypothesis 2) and to find support for hypothesis 3, addressing behavioral price cues in the tangible environment (i.e., a buffet).

4.2 Study 1

Method

To test the hypotheses, a 2 (elaborate vs. generic menu descriptions) x 2 (chic vs. casual table decorations) between subjects experimental design was employed. A total of 132 undergraduate students participated in this study (44 men, 88 women; M_{age} = 20.7, *SD* = 3.02). These students were recruited at a Dutch university and included primarily psychology and communication science students. None of these students were (or had been) enrolled in classes addressing hospitality management or services marketing. Participants received course credits in exchange for their participation.

Upon arrival in the research lab, participants were directed to a separate room with a computer. A scenario prompted participants to imagine going out for dinner. For 40 seconds, a photo of the restaurant's interior was shown. Previous research indicates that photos can easily portray service environments, and that 'simulated' service environments produce similar effects as 'actual' service environments (Baron & Kenny, 1986; Stamps, 1990). Subsequently, for 30 seconds, participants saw a menu of the restaurant (without prices) and completed a questionnaire.

The symbolic meaning of the menu was manipulated by presenting a menu comprising generic menu labels (e.g., "a salad of salmon, pumpkin and goat cheese") or elaborate, descriptive labels (e.g., "Home-smoked salmon with sweet-and-sour pumpkin and a mousse of goat cheese"). A manipulation check confirmed that participants perceived the latter descriptions as more elaborate than the former: $F(1,130) = 30.08$, $p < .001$.

The symbolic meaning of the restaurant interior was manipulated by means of the table decorations. In the chic condition, the photo showed tables decorated with symbols

of luxury: high wine glasses, a bottle of wine, a tall candle holder, a pepper and salt shaker, and an extensive set of silverware. In the casual condition, the tables looked rather sober: no glasses, a pepper and salt shaker, a single knife, fork, spoon and napkin, and a plastic sign with a table number. To check this manipulation, participants indicated the extent to which they considered the table decorations luxurious. This check confirmed that the manipulation had the expected effect on the extent to which the decorations connoted luxury: $F(1,130) = 27.40$, $p < .001$.

Participants completed a "restaurant luxury"-scale, which measured the extent to which participants viewed the restaurant as luxurious. This scale consisted of nine five-point items including 'prestigious', 'luxurious', 'elegant', 'distinguished', 'renowned', 'exclusive', 'chic', 'stylish', 'tasteful' (Cronbach's $\alpha = .94$). Next, participants were asked to indicate the price (in Euros and Eurocents) they expected the restaurant to charge for (1) 'the most common main dish', (2) 'a three-course meal', and (3) 'a cup of coffee'. Expected price level was computed by standardizing and summing these three measures.

Results

Analysis of variance confirmed that table decorations affected perceptions of overall restaurant luxury. Participants perceived the restaurant with the chic table decorations as more luxurious ($M = 4.6$, $SD = 1.07$) than the restaurant with the casual table decorations ($M = 3.9$, $SD = 1.12$): $F(1, 128) = 13.67$, $p < .001$. Type of menu description also affected impressions of restaurant luxury; the elaborate menu descriptions induced impressions of the restaurant as more luxurious ($M = 4.5$, $SD = 1.18$) than the generic menu descriptions ($M = 4.0$, $SD = 1.08$): $F(1, 128) = 5.12$, $p < .05$. The interaction between both factors was non-significant: $F(1, 128) < 1$, *ns*.

In addition, both manipulations exerted effects on expected price level. Participants expected a higher price level in the restaurant with chic table decorations ($M = .4$, $SD = 2.24$) than they did in the restaurant with casual table decorations ($M = -.6$, $SD = 2.42$): $F(1,128) = 6.29$, $p < .05$. Similarly, elaborate menu descriptions induced a higher expected price level ($M = .3$, $SD = 2.50$) than generic menu descriptions ($M = -.5$, $SD = 2.19$): $F(1,128) = 4.15$, $p < .05$. Again, the interaction between both factors was non-significant: $F(1,128) = 1.24$, $p > .1$.

Mediation analysis, following the procedure outlined by Baron and Kenny (1986), confirmed that the effects of the symbolic meaning manipulations on the expected price level were both fully mediated by the impression of the restaurant as luxurious. The table

decorations (dummy-coded) affected the expected price level as well as the impression of the restaurant as luxurious (see Table 4.1, regression 1 and 2 respectively). A regression analysis with 'table decorations' and the impression of the restaurant as luxurious (mediator) as predictors, and perceived price level as the criterion, showed that the effect of the mediator remained significant, while the effect of the table decorations was not significant (see Table 1, regression 3).

Table 4.1: Mediation analysis confirms that the effect of expected price level is fully mediated by perceived luxury.

Independent variables	β	*t*	*p*
Regression 1:			
Dependent variable: Expected Price Level			
Table decorations	-.21	2.49	< .05
Regression 2:			
Dependent variable: Perceived Luxury			
Table decorations	.30	3.63	< .001
Regression 3:			
Dependent variable: Expected Price Level			
Perceived Luxury	.26	3.03	< .01
Table Decorations	.13	1.53	> .1

Similarly, the menu descriptions affected the expected price level as well as the perceived luxury of the restaurant (see Table 2, regression 1 and 2 respectively). A regression analysis with 'menu descriptions' and the perceived restaurant luxury as predictors, and perceived price level as the criterion, showed a remaining significant effect of the mediator and a non-significant effect for the menu descriptions (see Table 2, regression 3).

Table 4.2: Mediation analysis confirms that the effect of menu descriptions on expected price level is fully mediated by perceived luxury.

Independent variables	β	*t*	*p*
Regression 1			
Dependent variable: Expected Price Level			
Menu descriptions	.17	1.98	< .05
Regression 2			
Dependent variable: Perceived Luxury			
Menu Descriptions	.19	2.18	< .05
Regression 3			
Dependent variable: Expected Price Level			
Perceived Luxury	.28	3.33	< .01
Menu Descriptions	.12	1.39	> .1

These analyses confirm that the effects of symbolic price cues (the style of descriptions in the menu and table decorations) on the expected price level are fully mediated by the perceived luxury of the restaurant. A second study was conducted to replicate the findings concerning the symbolic meaning of objects, while establishing another price inference mechanism, namely the formation of price expectations based on (the absence of) tangibles signaling customer participation. We expect that an environment imposing customer participation lowers the expected price level by heightening the expected amount of required customer participation.

4.3 Study 2

Method

To test hypotheses 2 and 3, a 2 (chic vs. casual table decorations) x 2 (interior imposing customer participation vs. interior not imposing customer participation) between subjects experimental design was employed. In this study, 151 undergraduate students participated (60 men, 91 women; mean age = 20.8 SD = 2.57) who received course credit in exchange for participation.

The procedure of the present study was almost identical to the one used in study 1. Participants imagined going out for dinner. Next, they saw a photo of the restaurant interior and filled out a questionnaire. This time, no menu of the restaurant was shown.

The manipulation of the symbolic cue was identical to the one in Study 1. Table decorations were either chic or casual in nature. Again, the manipulation had the expected effect on the perceived luxury of the table decorations: $F(1,149) = 67.21$, $p < .001$.

The restaurant environment triggered expectations of a high or a low level of customer participation. In the high-participation condition, the photo displayed a buffet in the background, imposing customer participation by indicating that customers are to contribute to the service process by getting over to the buffet and selecting their choice of dishes. In the low-participation condition, no buffet was displayed, signaling that guests are to choose between alternatives from a menu, place their order and wait for the service delivery to unfold. To check the behavioral cue manipulation, participants indicated whether they considered the restaurant a buffet restaurant or an à la carte restaurant. This manipulation check confirmed that the manipulation had the expected effect on the extent to which participants considered the restaurant a buffet restaurant rather than an à la carte restaurant: $\chi^2 = 38.04$, $p < .001$.

A 9-item restaurant luxury scale (Cronbach's $\alpha = .93$) and a 3-item customer participation scale (Cronbach's $\alpha = .75$) was administered. For this latter scale, participants indicated how likely they thought it was that guests would have to get up to collect their own dish, scoop up their own meal, and choose their meal from a menu (reverse coded). As in Study 1, participants indicated the price (in Euros and Eurocents) they expected to pay for the most common main dish, a three-course meal, and a coffee. Again, the expected price level was computed by standardizing and summing these three measures.

Results

As in Study 1, the impression participants held of the restaurant was affected by the table decorations. Participants perceived the restaurant with the chic table decorations as more luxurious ($M = 4.0$, $SD = 1.16$) than the restaurant with the casual table decorations ($M = 3.1$, $SD = .83$): $F(1, 147) = 32.34$, $p < .001$. The effect of the behavioral cue on the impression of the restaurant as luxurious was not significant ($F(1, 147) = 1.14$, $p > .1$), neither was the interaction between both factors ($F(1, 147) = 1.84$, $p > .1$).

As anticipated, participants expected more customer participation in the restaurant where a buffet was present ($M = 3.5$, $SD = 1,38$) than in the restaurant where no buffet was present ($M = 2,3$, $SD = 1,07$): $F(1, 147) = 39.97$, $p < .001$. A smaller, yet significant effect arose from the symbolic cue manipulation on the expected amount of customer participation: participants expected that more customer participation was required in a

restaurant with casual table decorations (M = 3.3, SD = 1.34) than in a restaurant with chic table decorations (M = 2.4, SD = 1.26): $F(1, 147) = 21.02$, $p < .001$. Again, the analysis revealed no significant interaction effect: $F(1, 147) = 1.66$, $p > .1$.

Furthermore, the results confirmed that consumers use both symbolic and behavioral environmental cues when they form expectations about the price level in a restaurant. In a restaurant with a buffet, participants expected a lower price level (M = -.5, SD = 1.84) than in a restaurant without a buffet (M = .5, SD = 2.95): $F(1, 147) = 5.29$, $p = .02$. Similarly, the table decorations exerted an effect on the expected price level: In a restaurant with chic table decorations, participants expected a higher price level (M = .6, SD = 2.73) than in a restaurant with casual table decorations (M = -.6, SD = 2.05): $F(1, 147) = 10.61$, $p = .001$. The interaction was not significant: $F(1, 147) < 1$, *ns*.

Again, using the procedure of Baron and Kenny (1986), we demonstrated that the effect of table decorations on expected price level was mediated by perceived restaurant luxury. The table decoration exerted an effect on both the expected price level and the impression of the restaurant as luxurious (see Table 4.3, regression 1 and 2 respectively). A regression analysis with table decoration and 'restaurant luxury' as predictors, and perceived price level as the criterion, showed that the effect of the mediator remained significant, while the effect of the presence of the table decorations became non-significant (see Table 4.3, regression 3).

Table 4.3: Mediation analysis confirms that the effect of table decorations on expected price level is fully mediated by perceived luxury.

Independent variables	β	*t*	*p*
Regression 1			
Dependent variable: Expected Price Level			
Table decorations	.26	3.24	< .001
Regression 2			
Dependent variable: Perceived Luxury			
Table decorations	.42	5.69	< .001
Regression 3			
Dependent variable: Expected Price Level			
Perceived Luxury	.35	4.18	< .001
Table Decorations	.11	1.33	> .1

Next, mediation analysis tested whether the effect of the behavioral cue on expected price level (see Table 4.4, regression1) was mediated by expected customer participation. In line with the ANOVA analyses reported earlier, the behavioral cue affected the expected

amount of customer participation (see Table 4, regression 2). The regression analysis with 'presence of buffet' and the expected amount of customer participation (mediator) as predictors, and perceived price level as the criterion, showed that the effect of the mediator was significant while the effect of "buffet presence" is not significant (see Table 4, regression 3).

Table 4.4: Mediation analysis confirms that the effect of the presence of a buffet on expected price level is fully mediated by expected amount of customer participation.

Independent variables	β	*t*	*p*
Regression 1			
Dependent variable: Expected Price Level			
Presence of a buffet	.18	2.26	<.03
Regression 2			
Dependent variable: Expected Customer Participation			
Presence of a buffet	.44	5.94	< .001
Regression 3			
Dependent variable: Expected Price Level			
Expected Customer Participation	.29	3.28	< .01
Presence of a buffet	.06	.66	> .1

Again, the results show that the effect of the symbolic cue on the expected price level was mediated by perceived restaurant luxury, whereas the effect of the behavioral price cue on the expected price level was mediated by the expected amount of customer participation.

4.4 Discussion

The results of the present studies shed light on the ways in which price expectations in hospitality services are based on symbolic and behavioral cues in the service environment. More specifically, the studies illustrate how prices can be based on luxury perceptions and beliefs regarding the amount of required customer participation in the realization phase. These types of beliefs can be based on cues that are embedded in the service environment. This study contributes to the body of literature by revealing these two distinct paths through which environmental features can impact price expectations. In the next section, the two price inference mechanisms are discussed.

Symbolic Price Cues

Tangibles are barely ever neutral, but carry meanings beyond their shape and functioning (Bitner, 1992; Rapoport, 1982). First, we found that restaurant menus can contain symbolic price cues that are used to assess the service. The present studies contribute to the menu literature by showing that, besides increasing quality and value perceptions (Wansink et al., 2001), these elaborate labels also increase the expected price level of the restaurant. Usually, prices are included in the menus and hence, the price expectation that may be formed while reading the description can be compared with the actual price instantly. As such, the price expectation that may be based on the description serves as a frame of reference when interpreting the actual price (Herr, 1989).

Secondly, table decorations can signal luxury, which leads to increased price expectations. This means that in designing a restaurant interior (e.g., when deciding what to put on the tables), managers should not only consider the aesthetic and functional value, but also the symbolic meaning that is embedded in the arrangement. Dependent on the type of service and the consumer, luxurious looking facilities prompt desirable or undesirable responses. Symbols of luxury can be in line with a restaurant's positioning strategy, add to the perceived value of the service, and thus justify higher pricings. Yet, expensive looking facilities can also induce perceptions of financial mismanagement (Baker, Berry, & Parasuraman, 1988). Furthermore, in some segments of the market, a luxurious price image is simply be more appropriate than in other sections. For instance, Gardner and Siomkos (1985) found that respondents evaluate a brand of perfume more favorably when the store design was described as having "high-image" attributes (e.g., carpeted floors, wide aisles) as opposed to "low-image" attributes (e.g., smelly dressing rooms, badly dressed personnel). Yet, for other products or services (e.g., fast food restaurants, snack bars), such as a high-image environment may be inappropriate and out of line with expectations.

The finding that symbolic cues in the environment are used to infer prices can best be explained in terms of the material priming approach (Kay et al., 2004; Meyers-Levy & Zhu, 2008): because environmental elements are associated with other constructs in the consumers' minds, exposure to such environmental features may activate constructs such as prestige or hip. Such construct activation, in turn, can influence consumers' categorization (Lombardi, Higgins, & Bargh, 1987), judgments (Bargh, 2002), and behaviors (Bargh, Chen, & Burrows, 1996).

In line with the persuasion knowledge model (Friestad & Wright, 1994), one might argue that consumers are, at least to some extent, aware of the positioning strategies hospitality managers adopt in designing their environments. When consumers believe the meanings conveyed by objects in the environment do not accurately represent the organization's true identity, they may come to believe that the organization is not credible. Hence, they will consider the service environment unauthentic and phony, and may come to believe that the service provider is unfair and unreliable. For instance, when actual prices are low, consumers may regard luxury cues as unauthentic, and, consequently, may consider low prices an indication of low quality (Baker, Grewal, & Parasuraman, 1994; Kirmani & Rao, 2000). Upon entering a hospitality environment, visitors are usually faced with a myriad of price cues. When consumers are confronted with conflicting cues within the service setting, they may come to regard the luxury cues as unauthentic.

Behavioral Price Cues

In addition to affirming the importance of symbolic cues with respect to price expectations, the results indicate that consumers base price expectations in the hospitality industry on functional service beliefs. Environmental cues signal the roles the customer is to play in the service delivery process. Such behavioral cues affect the type of service script activated in a particular service situation (Bateson, 2002; Solomon, Surprenant, Czepiel, & Gutman, 1985). Whereas in a self-service script customers are to perform most tasks, in a full-service script tasks are predominantly performed by service employees. For instance, a self-service set-up in a hotel's breakfast signals the extent to which and the manner in which hotel guests are to be involved when breakfast is being served (e.g., by getting over to the buffet, by selecting and scooping up the food, and by toasting their own bread). Similarly, a shoe polishing machine in a hotel automatically signals how it is to be handled. In other words, consumers may derive the specific sequence of actions from the mere exposure to tangibles in the environment. Consumers can infer prices from their beliefs regarding their input relative to that of the provider's: when customers expect they have to contribute much effort relative to the service provider, they will expect a lowered price.

However, we do not mean to imply that customers will always prefer a service in which they have to invest little effort. Some customers prefer the 'do-it-yourself' option over being served even when no incentive is offered (Bateson, 1983, 1985). People may choose the self-service option to avoid contact with service personnel, increase their

control over service outcomes (Oyedele & Simpson, 2007), or to save time (Dabholkar, Bobbitt, & Lee, 2003). On the other hand, consumers may be inclined to avoid self-service because of low self-efficacy beliefs (McKee, Simmers, & Licata, 2006) or a negative attitude towards technology (Dabholkar et al., 2003). Taking note of such findings, Bowen (1990) argues for customer segmentation profiling based on consumers' willingness to participate in the production of a service. Future research should explore the interaction between behavioral cues and self-service attitude on price expectations.

Conclusions and Managerial Implications

The results presented suggest that price expectations are the result of beliefs regarding the functional or service-related dimension of a service offer (Israeli & Barkan, 2004). However, price expectations may also result from beliefs regarding the technical or production-related aspects of a service (Israeli & Barkan, 2004): In a full-service restaurant, that is, consumers may expect food quality to be superior (Baker et al., 1994; Reimer & Kuehn, 2005). Likewise, elaborate menu labels may not only increase price expectations, but also raise the perceived quality and value of the offering (Wansink et al., 2001). These beliefs regarding the technical service dimension may also mediate the relationship between environmental cues and price expectations. Future research is needed to establish the relative importance of technical and functional service beliefs in price inference processes.

In consumer decisions, price expectations serve as a reference price against which actual prices are being judged (Monroe & Lee, 1999); When the actual price level exceeds the price level communicated through symbolic and behavioral cues in the service context, consumers are likely to infer that the service is overpriced, leading to avoidance behavior. When the actual price level is lower than the price level communicated through symbolic and behavioral environmental cues, consumers may feel they have "gained" money, relative to their reference point, leading to approach behavior (Briesch et al., 1997; Raghubir, 2006). However, consumers' actual purchases are not only the result from the comparison of actual prices with expected prices, but also dependent on the price a consumer is willing to pay (Monroe, 1984; Urbany, Bearden, & Weilbaker, 1988). Although willingness to pay is arguably influenced by a wider range of factors (e.g., the situational relevance of the offer), it is nonetheless feasible that environmental cues that signal the value of an offer, such as the attractiveness of the environment, will also contribute to consumers' willingness to pay (Baker et al., 2002). In addition, price expectations are

important because ones motivation to search for actual price information and to consider a restaurant in the first place may depend on a comparison between the expected price and the price a consumer is willing to pay. As such, price expectations serve as an anchor in consumer decision-making. Future research might incorporate both measures in order to further unravel the influence of environmental cues on actual consumer behavior.

Therefore, service providers are faced with the difficult, but important task to manage consumer price expectations. Because the tangible service environment encompasses subtle price cues -such as menu descriptions, table decorations, and functional set-up- the servicescape is a powerful tool to be used in the management of consumer knowledge. To 'orchestrate' price expectations, one needs a clear understanding of the meanings one's target group assigns to tangible elements. By carefully pretesting interior designs, hospitality managers can develop an understanding of the meanings people assign to their settings. Although some symbolic and functional attributes of the service may come at a costs (i.e., full-service set-ups simply require more personnel than self-service set-ups), many symbolic attributes signaling high prices (e.g., elaborate menu descriptions) are as costly as attributes signaling low prices (e.g., generic descriptions). Furthermore, changes in the tangible environment are relatively easy to apply (when compared to changing service operations), may involve a relatively modest one-time investment which will affect many guests over a long period of time (Ulrich et al., 2004).

In conclusion, the present studies strengthen the idea that tangibles in a hospitality setting are a very rich source of information and impact a wide variety of consumer expectations and perceptions (Baker et al., 1994; Sharma & Stafford, 2000). The present studies contribute to the body of literature by illustrating how price expectations not only follow from generic assimilation effects (Baker et al., 2002), but also from fairly specific beliefs, inferred from cues in the tangible environment. This underlines the importance of symbolism with respect to consumer inference-making (Kim & Moon, 2009). Practitioners should not only strive to create attractive service environments, but they should also use environmental cues such as menus, decorations, and set-ups, to actively manage consumers' price image. As yet, we concentrated our research effort on one aspect of the decision-making process: price expectations. Future research should explicate how different types of tangibles in the service environment can impact consumers' willingness to pay and actual purchase behaviors. In the meantime, the findings presented add to the steadily increasing body of literature stressing the importance of the service environment with respect to consumer decision making.

5

The Art of Visual Communication: Effects of Artwork Display on Consumer Perceptions

In Chapter 4, we showed how environmental inferences (price expectations) can result from the categorization of firms as a result of mundane design cues. In this chapter, we will expand our exploration of design cues in two ways. First, instead of investigating mundane, everyday objects, we will now include extraordinary environmental cues: paintings. Secondly, instead of focussing on the mere presence of design cues, we now turn our attention to characteristics (e.g., style) of design cues. As in chapter 4, we explore how consumers infer service attributes and firm attributes from design cues.

5.1 Introduction

In service settings such as hotels, casinos, restaurants, and even in public transportation, consumers come across many art objects such as wall paintings, sculptures, canvas paintings, and photographs. Some companies even hire art curators to maintain the collection of artwork and conduct guided tours for clients during which the vision and mission of the company are explained (Darsø, 2004). Mads Øvlisen, the CEO of the pharmaceutical company Novo Nordisk uses art in a particularly strategic way: He buys art from young, unknown artists. These artworks may not always be popular among his employers, but they are always provocative. From his point of view, art is supposed to signal that Novo Nordisk is a company *"where you are allowed to think differently, where you may make mistakes and learn from them…. I hope it makes you stop and ask a few questions."* (Darsø, 2004). In this company, art is used to communicate and reinforce its corporate identity (Bruder & Ucok, 2000).

Art is not only a means to arouse and stimulate consumers, but also a way to create an aesthetic experience in the observer's mind, that is based on sophisticated and rich messages (Arnheim, 1974; Berlyne, 1971; Meyers-Levy & Zhu, 2008; Parsons, 1987). For consumers it is not only informative to see whether or not firms display artwork in their servicescape, but the choices with respect to the characteristics of the piece of art can reveal a wealth of information about the firm. As such, art is not only a means to embellish service environments, but a piece of art can also communicate corporate values and identities. With such effects in mind, firms are turning to artwork to affirm and communicate their identity to visitors (Darsø, 2004). The notion that artwork affects consumer impressions is beyond much doubt. Although a great deal of effort has been devoted to enhance our understanding of art interpretation (Mitchell, 1995; Nelson & Shiff, 2003; Schapiro, 1996), real insight in the question how art contributes to inferential service beliefs is still rather limited. As a consequence, a scientific base for the use of art in service environment is lacking. In this chapter we attempt to improve our understanding of the role of art characteristics in consumer inference making by exploring consumer beliefs in a fictitious advertising agency setting. We will argue that inferences based on artwork are the result of a material priming effect (Kay et al., 2004); perceiving visual art can increase the cognitive accessibility of related constructs in the consumer's mind (Higgins, Bargh, & Lombardi, 1985; Meyers-Levy & Zhu, 2008). By activating these constructs, a work of art affects people's impression of the displayer (Bargh, 2002).

Although it is well established that artwork can prime a wide variety of concepts (Furnham & Walker, 2001; Joy & Sherry, 2003; Konecni, Wanic, & Brown, 2007; Rollins, 2004; Venkatesh & Meamber, 2006), as yet, art has largely been neglected in the literature on servicescapes. Inspired by the priming literature (Bargh, 1997; Kay et al., 2004) we propose that the characteristics of art can be considered as contextual cues that prime observers (Konecni et al., 2007).

5.2 Art as a Prime

Upon perceiving a work of art, an observer interprets what he or she sees (Efland, 2002). There may be shapes, colors and representations that he or she recognizes (Arnheim, 1974). These shapes, colors, and representations are usually known (i.e., stored in the long term memory) and associated with other concepts (Park & Guerin, 2002). For instance, the color orange may be associated with the concepts 'oranges', 'cheerfulness', and 'sunshine'. Likewise, a chaotic set-up of elements can be associated with 'freedom', 'dynamism', and 'creativity', while a strict organization of elements is associated with 'order' and 'control'. Upon perceiving these attributes, related concepts become activated in memory, and are easier to access. Because such a concept is easy to access, it can automatically influence the way we interpret new information (Bargh, 2002). When a consumer perceives orange colors and cheerful forms in a painting, this can prime joy, which may lead the consumer to believe that the service firm is a joyful organization.

5.3 Hypotheses

Art can affect consumer inferential beliefs by means of its vividness and my means of its style (abstract or figurative). First of all, artworks produces an aesthetic experience by providing stimulation for observers (Graham, 1997). The degree to which observers are stimulated varies. While some art provides a lively, stimulated experience (i.e., vivid art), other work is more serene and tranquil in nature. Secondly, artwork may stimulate observers by representing reality. Yet, art can also stimulate observers without direct reference to reality, for example, by virtue of its shapes and colors.

In other words, the aesthetic experience and consumer beliefs that result from this experience may be a function of both the degree to which the artwork stimulates the observer (i.e., the vividness of the piece) and the degree to which it represents reality (i.e., level of abstraction). The role of these factors in the formation of consumer beliefs will be discussed below.

Consumer Beliefs Based on the Vividness of Art

By virtue of its form and color, an artwork in a service environment can stimulate consumers both emotionally and cognitively. In terms of priming, a vivid piece of art may prime excitement, while a tranquil piece of art is associated with calmness. The increased accessibility of 'excitement' may lead to increased levels of perceived excitement of the firm. Because some service attributes, in turn, may be associated with exciting organizations, art may also affect perceptions and expectations of the services that are provided by the firm. For instance, consumers may associate exciting advertising agencies with creative solutions, but unexciting organizations with reliable and sound solutions. This leads to hypotheses 1a and 1b:

H1a: A firm that displays vivid art will be perceived as a more exciting organization than a firm that displays tranquil art.

H1b: A firm that displays vivid art will be expected to offer more creative solutions than a firm that displays tranquil art.

Inferences Based on the Level of Abstraction

The most prevalent way of categorizing visual art is distinguishing between abstract and figurative work (Avital, 1997). We expect that consumers use the level of abstraction as a signal for organizational culture. Because for the interpretation of abstract art, the manner in which elements are organized is at the centre of attention (Ehrenzweig, 1967), in the observers' minds, abstract art may be associated with 'organizational structure' and 'hierarchy'. Consequently, the exposure to an abstract piece of art may prime such concepts as hierarchy and structure. As a result, a consumer is more likely to infer that the corporate culture of the service organization is characterised as hierarchical (Denison & Spreitzer, 1991), and emphasis is on the enforcement of rules, the hierarchical organizational structure, and technical matters (Zammuto & Krakower, 1991). Furthermore, we expect that when abstract art is displayed, a service firm is perceived as

a rational organization. Such an organization emphasizes outcomes and goal fulfillment. Productivity and efficiency are major goals in a rational corporate culture (Zammuto & Krakower, 1991). In sum, we expect that abstract art primes hierarchy and rationality.

H2a: A firm that displays abstract art will be perceived as having a more hierarchical corporate culture than a firm displaying figurative art.

H2b: A firm that displays abstract art will be perceived as having a more rational corporate culture than a firm displaying figurative art.

Individual Differences in Consumer Inferences

Environmental inferences based on artwork display can also be evaluative in nature. In a service setting, such evaluative judgments affect approach behaviors. However, because art appreciation and interpretation are highly personal (Furnham & Chamorro-Premuzic, 2004), we expect individual differences in the effects of art on evaluative judgments. Research exploring the relationship between personality and art appreciation is well documented (Chamorro-Premuzic, Furnham, & Reimers, 2007; Furnham & Chamorro-Premuzic, 2004; Furnham & Walker, 2001). The Big Five personality trait 'openness to experience' (Costa & McCrae, 1992; McCrae & Costa, 1997) appears to be of particular importance when it comes to art appreciation and interpretation: *"As neurotics can be used as exemplars of high scores on the dimension of neuroticism, so artists can be considered primer examples of individuals high in openness to experience"* (McCrae & Costa, 1997, p. 825). Openness to experience is positively related to interest in art, art activities, art knowledge (Furnham & Chamorro-Premuzic, 2004), and intellectual curiosity (McCrae, 1996). Although this does not necessarily translate into a preference for abstract art per se (Furnham & Walker, 2001), we do expect that people high on openness evaluate an *organization* displaying abstract art more favorably than one displaying representational art. After all, because openness to experience is positively related to intellectual curiosity (Ashton, Lee, Vernon, & Jang, 2000), and because abstract art enables more diverse interpretations, we expect that consumers who are open to experience evaluate an organization displaying abstract art higher than one displaying figurative art. We do not expect to observe such an effect for people with low scores on openness to experience. This expectation is articulated in hypotheses 3:

H3: Consumers who are open to experience will evaluate an organization displaying abstract art higher than one displaying figurative art. No such effect is expected for consumers who are not open to experience.

To test the abovementioned hypotheses, we conducted a simulation experiment. Participants imagined being involved in a business-to-business service transaction. They were shown photos of the office environment of the potential business partner. In this environment two paintings were on display. In a 2 x 2 experimental design, levels of abstraction and vividness of these paintings were manipulated. Finally, participants were asked to assess the firm as well as the anticipated service and to rate their own openness to experience. First, a pretest was conducted to select the paintings for the different experimental conditions in the main experiment.

5.4 Pretest

In this pretest, 20 participants each viewed 16 preselected color photographs of paintings. This selection included a wide variety of both abstract and figurative paintings from various artists. The works were derived from an art archive and did not include well-known works. After viewing each photo, participants indicated to what extent they considered the painting abstract rather than figurative (2 items: 'abstract' and 'figurative', Cronbach's $\alpha = .72$) and to what extent they considered the paining vivid (10 items, Cronbach's $\alpha = .84$). The latter scale included items such as 'dynamic', 'trendy', and 'daring'.

Based on the results, we selected the eight paintings displayed in figure 5.1: two for each of the four experimental conditions in the main study. In figure 5.1, the photos and the average pretest scores are displayed. The paintings were selected such that the vividness scores of the paintings in the vivid condition ranged from 3.16 to 3.35 (on a 5-point scale). The vividness scores of the tranquil paintings ranged from 2.43 to 2.73. T-tests confirmed that each of the vivid paintings scored significantly higher on vividness than each of the paintings in the tranquil condition ($t(38) > 2.3$; $p < .03$). Abstraction scores for the figurative paintings ranged from 2.08 to 2.43 and for the abstract painting 2.90 to 4.33. Each of the paintings in the abstract condition scored higher on abstraction than each of the paintings in the figurative condition ($t(38) > 3.9$; $p < .001$), except for one

painting (M = 2.90, SD = .93) that scored at least marginally higher than each of the figurative paintings ($t(38) > 1.5$; $p < .08$).

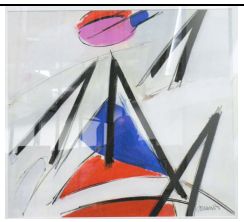
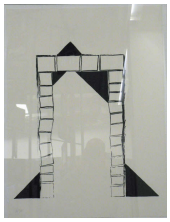
Figurative		**Abstract**	
Tranquil	**Vivid**	**Tranquil**	**Vivid**
			
V = 2.62 (.59) A = 2.43 (1.09)	V = 3.16 (.57) A = 2.08 (.91)	V = 2.46 (.64) A = 4.33 (.94)	V = 3.16 (.54) A = 3.55 (.67)
			
V = 2.43 (.83) A = 2.43 (1.00)	V = 3.30 (.55) A: 2.20 (.75)	V = 2.73 (.77) A = 2.90 (.93)	V = 3.35 (.63) A = 3.65 (.78)

Figure 5.1: Artworks used in the main study with main Vividness (V) and Abstraction scores (A). Standard deviations are displayed in parentheses.

5.5 Main study

The goal of the main study was to test the hypotheses that were formulated in the introduction. The eight paintings selected in the pretest were used as stimulus material in the main study.

Method

We conducted a scenario experiment with a 2 (abstract vs. figurative painting) x 2 (tranquil vs. vivid painting) x 2 (high vs. low on 'openness to experience') between-subjects design. Participants were 110 undergraduate students (43 men, 67 women, M_{age} = 21.5, SD = 2.91), who participated in exchange for course credits.

Participants were invited into the research lab and placed in separate rooms with a computer. Instructions were provided on-screen. First, participants were asked to imagine that they were working for a chain of office supply stores. They imagined being responsible

for selecting an advertising agency for the execution of an advertising campaign. Their task was to find out as much as possible about the agency to decide whether or not to hire this firm. While participants imagined meeting with a representative of the agency, they were shown two photos of the setting in which this meeting was to take place. These photos displayed the interior of the advertising agency's office: The photos were taken in a meeting room and in an office. In both photos, a painting was prominently placed in the background of the scene. Abstraction and vividness of the paintings were manipulated using the paintings from the pretest. Both paintings in the photos were either abstract or figurative and either vivid or tranquil (in line with the experimental design). After viewing the photos, participants filled out a questionnaire.

First, the questionnaire included a measure of the participants' perceptions of the firm's corporate culture. This scale measured the degree to which the participant perceived the firm as a rational organization (4 items: 'strive for success', 'purposeful', 'achievement-oriented', and 'result-oriented', Cronbach's α =.88) and as a hierarchical organization (4 items: 'regulation', 'secure', 'control', and 'stability', Cronbach's α = .83). These items were derived from the competing values instrument (Quinn & Spreitzer, 1991). Furthermore, the questionnaire included a measure of the perceived excitement of the firm (10 items, such as 'daring', 'trendy', and 'exciting' Cronbach's α = .89). These items were derived from the Brand Personality Scale (Aaker, 1997). Finally, participants gave an overall evaluation of the firm (4 items: 'good to work with', 'fun', 'nice', 'pleasant atmosphere', Cronbach's α = .93).

Next, a number of service attribute measures were included. In the advertising agency scenario, the service consisted of the design and realization of a campaign. We measured the anticipated creativity (4 items: 'creative solutions', 'pronounced views', 'unique solutions', 'contemporary solutions', Cronbach's α = .75) and soundness of the solutions that participants expected the firm to provide (1 item). Finally, participants filled out the 2-item 'openness to experience' subscale of the shortened Big Five personality questionnaire (α = ,67 Rammstedt & John, 2007). This scale consisted of the items 'strong imagination' and 'little artistic interest' (reverse coded).

Results

2 x 2 x 2 ANOVA analyses were performed to determine the (interactive) effects of abstraction and excitement. A median split was conducted on the 'openness to experience' personality scores. We will first present the analyses on the perceived excitement of the

firm, then we will turn to inferred service attributes, inferred corporate culture, and evaluative responses.

Perceived Excitement of the Firm

Analysis of Variance confirms that the vividness of the painting transfers directly to participants' perceptions of the firm: a firm that displays vivid art is perceived as more exciting (M = 3.84, SD = 1.05) than a firm that displays tranquil art (M = 3.39, SD = .99): $F(1, 102) = 5.09$, $p = .03$. In addition to this main effect of vividness, an abstract x openness to experience interaction effect was observed: $F(1, 102) = 4.58$, $p < .04$. While participants low on openness did not differ in their excitement ratings between firms displaying abstract or figurative art: $t(53) = .60$, *ns*, participants high on openness rated the perceived excitement of a firm displaying figurative art lower than firms displaying abstract art: $t(53) = -2.46$, $p < .02$. This means that for people who are high on openness to experience, the vividness of paintings is a signal for the excitement of firms, while for people low on openness to experience it is not. No other main or interaction effects were observed: $F < 2$.

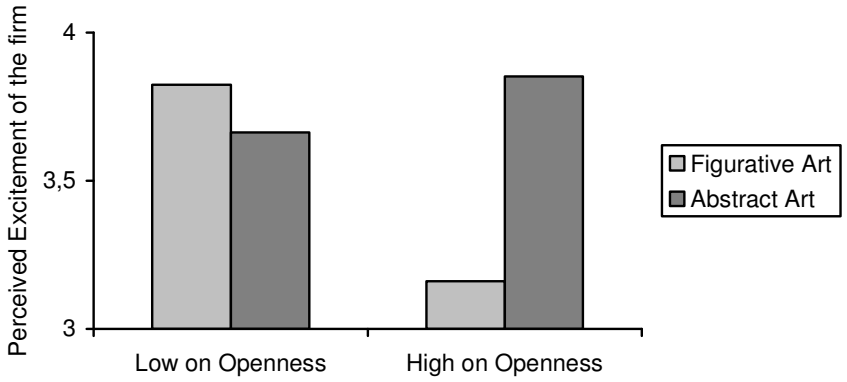


Figure 5.2: The interactive effect of level of abstraction and openness to experience on 'firm exitement'.

Perceived Service Attributes

Vividness of the artwork is also used for inferences regarding creativity: A firm displaying vivid art is perceived as offering more creative solutions then a firm displaying tranquil art (see Table 5.1). No main effect of abstraction, no main effect of openness to experience, and no 2-way or 3-way interaction effects on perceived creativity were observed: $F < 2.2$.

In addition, we analyzed whether an artwork's vividness and abstraction affected the extent to which the participant expected a sound solution. In a 2 x 2 x 2 Analysis of Variance, a significant main effect of vividness was observed: A firm that displays vivid art (as compared to tranquil art) is perceived as providing less sound solutions (see table 5.1). Again, no other main effects and no interaction effects were observed: $F < 1.4$.

In sum, these analyses illustrate how vividness does not just improve perceptions of the service, but this cue provides information regarding the nature of the service (i.e., more creative, but less sound).

Table 5.1: Effects of vividness on perceptions of service attributes. Standard deviations are displayed in parentheses.

	Mean Sum Scores		Significance (ANOVA)	
	Tranquil Art	Vivid Art	$F(1, 102)$	p
Creative Solutions	3.51 (1.05)	4.07 (1.13)	6.81	.01
Sound Solutions	4.92 (1.05)	4.42 (.98)	6.74	.01

Corporate Culture

Next, we assessed the effects of the displayed artwork on perceptions of the firm's internal corporate culture. A 2 x 2 x 2 ANOVA shows a main effect of abstraction on the degree to which the firm is characterized as a hierarchical culture: participants perceived a firm that displays abstract art as possessing a more hierarchical corporate culture than a firm that displays figurative art (see table 5.2). No main effect of vividness, no main effect of openness, and no interaction effects were observed: $F < 2.3$.

In line with these findings, a 2 x 2 x 2 ANOVA shows a main effect of abstraction on perceptions of a rational culture (see table 5.2), but no main effect of vividness, no main effect of openness to experience, and no interaction effect was observed: $F < .7$.

In sum, abstract art (when compared to figurative art) induces perceptions of a hierarchical and rational corporate culture.

Table 5.2: Effects of abstraction on perceptions of the firm. Standard deviations are displayed in parentheses.

	Mean Sum Scores		Significance (ANOVA)	
	Figurative Art	Abstract Art	$F(1,102)$	p
Hierarchical Culture	4.61 (1.13)	5.07 (.92)	5.62	.02
Rational Culture	4.73 (1.20)	5.31 (.95)	7.39	< .01

Evaluation of the firm

Finally, to test the third hypothesis, a 2 x 2 x 2 ANOVA analysis was performed. A main effect of abstraction was observed: the advertising agency displaying abstract art (*M* = 3.90, *SD* = 1,40) was evaluated more favorably than one that displays figurative art (*M* = 3.27, *SD* = 1,23): $F(1,102) = 6.66$, $p < .02$. This effect was moderated by the personality trait openness to experience: $F(1,102) = 5.65$, $p < .02$ (see figure 5.2). Whereas participants that scored low on openness showed no difference in evaluation between firms displaying figurative and abstract art ($t(53) = -.12$, *ns*), participants that are open to new experiences showed a clear preference for firms displaying abstract art ($t(53) = -3.47$, $p < .01$). Therefore, we accept our hypothesis that the influence of abstraction on firm evaluation is qualified by openness to experience. No other main effects and 2- or 3-way interaction effects reached significance: $F < 1.4$.

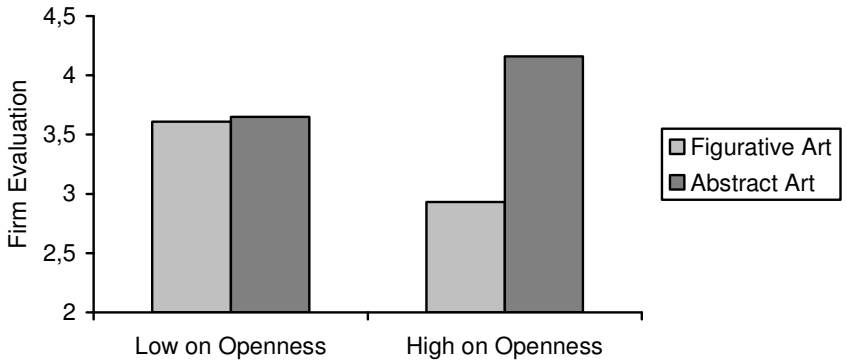


Figure 5.3: The interactive effect of level of abstraction and openness to experience on 'firm evaluation'.

5.6 Discussion

The study illustrates how visual art provides service firms a means to communicate their corporate values to their customers. Artwork does not only increase or decrease consumers' evaluative judgments, but art can also prime concepts that affect rather specific beliefs regarding the firm's identity and product characteristics. In the current experiment, we did not only show that vivid paintings (as compared to tranquil paintings) evoke perceptions of an exciting firm that offers creative solutions, but such paintings were also found to decrease the extent to which the solutions were expected to be sound. In

other words, the effects of artwork display on consumer perceptions can not satisfactorily be explained by mere halo-effects (Thorndike, 1920). Priming provides a better explanatory framework: artwork display primes concepts in the mind that affects consumer perceptions. In such a way, art may trigger rather specific inferential beliefs. Because the characteristics of artwork provide such a rich source of meaning, art can be such a powerful information cue for observers. Therefore, artwork should be chosen with great care and should reflect the desired corporate identity. In choosing artwork, the consumers' frame of reference (rather than the service providers' or the artist's) should be taken into consideration.

The study showed that abstraction and vividness are among the many art characteristics that play a role with respect to consumer beliefs and expectations. Below, we will elaborate on those factors.

Abstraction

First, and most obviously, when selecting a painting, one will have to decide whether to display an abstract or figurative painting. As the results indicate, abstract art primes hierarchy and organizational structure. Such a prime reinforces the impression of a rational, hierarchical organizational culture. This may be desirable if such a hard, businesslike impression is warranted. In the financial sector for instance, a customer may well believe that their interests are best represented by such an organization. What impression a firm should strive for, is a strategic marketing decision and should be handled as such. As a consequence, a service firm's artwork policy should be well aligned with its marketing policy and art should reinforce the same image as the other marketing tools do.

Vividness

Consumer beliefs may also be affected by an excitement prime. Vivid artwork can directly activate excitement in the consumer's mind and hence, an organization will be seen as more exciting. In that sense, the attributes of visual art are more or less directly transferred to the service firm. Likewise, a theatre with mysterious sculptures on its exterior may be perceived as mysterious, because mystery becomes activated. Such transfer effects have also been observed in studies on the effects of background music (Bolton, Grewal, & Levy, 2007; Dubé & Morin, 2001).

Individual Differences

As the results indicate, the interpretation of the artwork and the evaluation of firms based on this artwork is a very personal matter. People differ considerably in their understanding and interpretation of art (Parsons, 1987). Individual differences in art interpretation and 'art inference making' may be related to differences in taste, past experiences with art and services, art knowledge, and creativity.

Consumer responses to art may also differ because of a rather stable personality trait such as the 'Big Five'-trait openness to experience (McCrae & Costa, 1997). People differ in the extent to which they actively search for new and varied experiences (McCrae & Costa, 1997). Abstract art is particularly rewarding for people open to experiences because it can satisfy intellectual curiosity by enabling multiple interpretations. By exhibiting abstract art, an organization can signal that it values such experiences. This explains why people who are open to new experiences qualify a firm that displays abstract art as exciting and evaluate such a firm higher than a firm that displays figurative art.

Furthermore, people may also differ with respect to their expectations regarding the appearance of the service environment. As previous research has shown, people can form expectations regarding the specifications of a service environment prior to encountering the service environment (Ward et al., 1992). Their inferential beliefs may depend on the confirmation of these stereotypical expectations. In the advertising agency example, people may expect vivid and abstract art. A disconfirmation of such an expectation may lead to more fine-grained information processing because the stereotype is disconfirmed.

In this study, aesthetic preference for the artwork was not measured. Therefore, it is impossible to determine whether in our sample, openness to experience was positively related to an aesthetic preference for abstract over figurative art. However, although previous studies found that openness to experience is related to a preference for art *per se* (Furnham & Chamorro-Premuzic, 2004), no evidence was found that openness to experience is also associated with a preference for abstract over figurative art (Furnham & Walker, 2001). This suggests that the positive relationship we found in this study between abstraction of the *artwork* and evaluation of the *firm* can not be satisfactorily explained by aesthetic preferences. Rather, it seems that people high in openness to experience express a liking for the values that organizations carry out by displaying abstract art.

By displaying abstract art, organizations provide an intellectual and creative stimulation that may be especially appreciated by people who are open to such new

experiences, regardless of their aesthetic judgment of the artwork at hand. Again, this illustrates how art inferences are based on the transmission of specific, rich meanings.

Part III

Ambient Cues

6

Interior Color in the Service Environment

In the sixth chapter of this dissertation, we will address the effects of an ambient cue in the service environment: interior color. First, we describe a scenario study in which we show that wall color in a general hospital can affect patients' environmental evaluation and emotional experience. In addition, we assessed how patients infer the quality of care from their environmental appraisal. The final study of this dissertation involves a field experiment on a lung ward of a general hospital in which wall color was manipulated by painting the walls either blue or white. We found that blue walls shorten the length of hospital stay for patients with chronic lung diseases. Such effects are particularly meaningful because environmental factors carry the greatest weight when actual service outcomes are affected.

6.1 Introduction

In contrast to goods, services can be considered experiences (Pine & Gilmore, 1999). As such, it is no surprise that consumers are to a large extent affected by the ambience of a service setting (Grove & Fisk, 1997). Ambient cues in the service environment 'set the tone' for a service experience. Research in environmental psychology has illustrated how ambient factors such as color, noise, and temperature can affect people's experiences and wellbeing (Gifford, 1997; Stokols & Altman, 1987).

These effects are of particular importance in service settings in which one's welfare is threatened. Healthcare is a fascinating case in this respect. For instance, upon hospitalization, people are to spend considerable time away from family and friends in an unknown, potentially threatening environment. At the same time, patients in a hospital have to cope with physical inconveniences, unpleasant bodily sensations, uncertainty and worries about their health. In other words, 'consuming' a healthcare service can be an extremely stressful experience (Mishel, 1984; Topf, 2000). Such circumstances put very specific demands on healthcare environments: facilities should be designed to relieve threats to patients' wellbeing (Arneill & Devlin, 2002). This does not only mean that healthcare facilities are to secure the patient's safety by safeguarding against infections, medicating errors, or accidents (Ulrich et al., 2004), but healthcare facilities should also cater to patients' psychological needs (Rowlands & Noble, 2008). For instance, healthcare environments can alleviate patients' stress levels, and enhance their experienced emotions, quality assessments, satisfaction, intention to return, and willingness to recommend (Hutton & Richardson, 1995). In addition, the environment can enhance health related outcomes such as the experience of pain (Tse, Ng, Chung, & Wong, 2002), breathlessness (Zvolensky & Eifert, 2001), and length of hospital stay (Benedetti, Colombo, Barbini, Campori, & Smeraldi, 2001; Ulrich, 1984). As such, improvements in environmental factors can reduce the costs of care. From the patient's perspective, improved healthcare environments can enhance and shorten their hospitalization. It means they can continue their recovery in a safe, secure environment at home.

Hospital managers have begun to realize this role of environments: The current trend in healthcare design is to create attractive, relaxing atmospheres in order to relieve patients' stress and anxiety, improve their emotions and hence enhance the 'consumer' experience (Devlin & Arneill, 2003). Studies in the field of 'healing environments' have shown that factors such as light (Benedetti et al., 2001), nature (Cooper Marcus & Barnes,

1999), and noise (Baker, 1992; Morrison, Haas, Shaffner, Garrett, & Fackler, 2003; Topf, 2000) affect patient psychological well-being considerably. Although wall color constitutes one of the most important design choices (Eiseman & Hickey, 1998; Kuller, Ballal, Laike, Mikellides, & Tonello, 2006; Kwallek, Lewis, Lin-Hsiao, & Woodson, 1996), it has received little research attention in the context of healthcare facilities (For an exception see Dijkstra, Pieterse, & Pruyn, 2008). As a consequence, most color schemes that are used in healthcare facility design in practice have little or no empirical basis (Calkins, 2002).

In this chapter, we address the influence of wall color in a general hospital. In two experiments the effects of color on patient responses have been explored. Study one is a laboratory experiment in which we explore how wall color (white vs. blue) influences patients' psychological wellbeing and environmental appraisal. This study relies on self-reports about an anticipated service experience (a hospital stay). In study two, we explore the effects of color in an actual healthcare setting: a lung ward of a general hospital. We investigate whether wall color can also affect the length of hospital stays for lung patients. Reduced hospital stays could be the result of reduced respiration rates (a physiological route) or improved well-being (psychological route). Before elaborating on those two studies, we will discuss the effects of wall color on patient responses.

Colors vary in hue, saturation (intensity of the hue), and brightness (luminance of the hue, Valdez & Mehrabian, 1994). Hues are what we typically refer to as colors (Calkins, 2002). It is determined by its wavelength (Wyszecki & Stiles, 2000): Cool colors such as violet and blue have a low wavelength (< 500 nm). Green (about 510 nm) and yellow (about 570 nm) have a slightly higher wavelength. High wavelength colors are perceived as warm: e.g., orange and red (590 - 650 nm).

A color's wavelength can influence people in many ways (Yildirim, Akalin-Baskaya, & Hidayetoglu, 2007). First, it can directly affect ones' physiological state. For instance, color can affect blood pressure, frequency of eye blink and respiration rate (Gerard, 1957). Secondly, color affects ones emotional experience (Crowley, 1993): Whereas long wavelength colors (warm colors) result in feelings of arousal, short wavelength colors (cold colors) calm people down (Kaya & Epps, 2004; Stone, 2003; Valdez & Mehrabian, 1994). Furthermore, it has been found that arousal levels, elicited by colors, can affect stress and anxiety (Birren, 1979). Cool colored environments generally evoke more positive emotional responses than warm-colored environments (Babin, Hardesty, & Suter, 2003; Valdez & Mehrabian, 1994). Blue light has even been used in the treatment of depression (Glickman, Byrne, Pineda, Hauck, & Brainard, 2006). Thirdly, color can affect people's

appraisal of the environment (Yildirim et al., 2007). Although the appreciation of color is highly personal (Ellis & Ficek, 2001), some general trends have been observed: Blue has been found to be the most appreciated color throughout color literature (e.g., Bellizzi, Crowley, & Hasty, 1983; Crowley, 1993; Guilford & Smith, 1959). Finally, such physiological, emotional, and cognitive reactions to color can affect more generic, seemingly unrelated responses towards an organization such as perceived service quality (Bellizzi & Hite, 1992). This means that in blue colored hospital environments patients may hold more positive beliefs regarding the care provider than in settings in the traditional white colors (Hutton & Richardson, 1995). This prediction is based on a HALO effect: while consumers typically have insufficient information to predict the quality of a health care service, they do have information to assess the quality of the service environment. They simply assume that the quality of care is similar to the quality of the environment.

In the majority of color studies, participants are confronted with colored light (Jacobs & Suess, 1975) or with isolated colors projected on screens (Wilson, 1966), rather than colors embedded in service environments (for exceptions see Dijkstra et al., 2008; Küller, Mikellides, & Janssens, 2009). Although color effects are highly context-dependent (Crowley, 1993), participants are typically only exposed to the colors for a short period and in an artificial setting. Therefore, as yet, the evidence regarding color effects in healthcare settings remains inconclusive and incomplete.

In a scenario experiment we tested whether blue walls in a hospital improve patient responses when compared to traditional white walls. In line with the abovementioned literature, we expect patients in a hospital room with blue walls to experience more positive emotions (i.e., more pleasure and a lower anxiety), to evaluate the room more positively, and to appraise the quality of the service higher than subjects exposed to a white hospital room.

In study 1 we asked healthy participants to image being hospitalized with a leg fracture. They were shown an examination room and a ward room either with blue or white walls. Participants were randomly assigned to one of these conditions. Subsequently, participants were asked to reflect on their anticipated experience of the hospital stay.

6.2 Study 1

Method

A total of 90 healthy undergraduate students (30 men, 60 women; M_{age} = 21.72; *SD* = 2.64) participated in a uni-factorial between-subjects design (blue vs. white wall color), using desktop computers in a social science laboratory. First, participants were asked to imagine a hospitalization with a leg fracture, after a fall from a ladder. The scenario described how the patient, upon arrival in the hospital, was admitted to a first aid examination room. After the doctor made X-ray pictures, he performed surgery on the patient. Next, for 70 seconds, subjects were exposed to a QuickTime 360° panorama photo of an examination room. Photos were taken at a local hospital. In a 360° panorama, the direction and rotation speed of the representation can be controlled by moving the mouse in the desired direction. This gives people the experience of actually being in such a place and enhances the ecological validity of the procedure. Wall color was manipulated using Adobe Photoshop. Subjects were randomly assigned to either the white (Hue 336°, Saturation 3%, Brightness 93%) or the blue experimental condition (Hue 226°, Saturation 27%, Brightness 80%). Next, participants filled out a questionnaire measuring anticipated pleasure, anticipated anxiety, appraisal of the room, and anticipated service quality. Anxiety was measured using the 6-item translated 'Profile of mood states' anxiety subscale (Wald & Mellenbergh, 1990; Cronbach's α = .92). This scale included items such as 'nervous', 'tense' and 'restless'. Then the 6-item Mehrabian & Russell pleasure subscale was administered (Mehrabian & Russell, 1974; Cronbach's α = .84). Sample items included 'happy', 'pleased' and 'satisfied'. The appraisal of the rooms was assessed using the 10-item environmental appraisal scale (Bitner, 1992; Cronbach's α = .81) with items such as 'pleasant', 'beautiful', and 'organized'. Finally, perceived service quality was measured, using a 13-item adjusted SERVQUAL-questionnaire (Parasuraman, Zeithaml & Berry, 1988; Parasuraman, Berry & Zeithaml, 1991; Cronbach's α = .87), which included items such as 'This hospital keeps its promises.' and 'I trust this hospital'.

Subsequently, the scenario described the patient being transferred to a private ward room. This was done to check whether the effects of wall color were similar in a ward room. A 360° panorama of the ward room was shown. Again, subjects were randomly assigned to the color conditions. The same colors were used as in the examination room, and again, the environmental appraisal, pleasure and anxiety-scales were administered.

Results

Not surprisingly, respondents anticipated feeling more anxious receiving treatment in the examination room (M = 3.05; SD = .85), than they did recovering in the ward room (M = 2.18; SD = .74): t(88) = 9.32, $p < .001$. Analyses of variance (see table 6.1) showed that in both rooms, blue walls significantly decreased anxiety compared to white walls, and also improved the anticipated pleasure and cognitive appraisal. Even more interestingly, participants in the blue examination room condition perceived a higher service quality than participants in the white examination room, even when the items referring to tangible aspects of the service, were omitted from the scale (F(1,88) = 7.33, $p < .01$).

Table 6.1: Means and standard deviation (in parentheses) for all measures in both experimental conditions.

	White walls	**Blue walls**	***F* (1,88)**	***p***
Examination room				
Pleasure	2.60 (.55)	2.87 (.50)	5.81	< .02
Anxiety	3.24 (.88)	2.85 (.80)	4.77	< .04
Cognitive Appraisal	3.27 (.37)	3.56 (.42)	12.30	<.002
Service Quality	3.24 (.48)	3.52 (.39)	9.56	< .004
Ward room				
Pleasure	2.54 (.68)	2.89 (.73)	5.36	< .03
Anxiety	2.36 (.77)	2.00 (.66)	5.77	< .02
Cognitive Appraisal	3.40 (.48)	3.70 (.50)	8.54	< .005

Mediation analyses (Baron & Kenny, 1986) were performed to examine the processes that underlies the effect of color on service quality beliefs (table 6.2, regression 1). The independent variable (color) significantly affected both mediators: anticipated pleasure and environmental appraisal (table 6.2, regression 2a and 2b respectively). Regression 3a shows how pleasure partially mediates the relationship between color and service quality, while regression 3b illustrates how environmental appraisal fully mediates the relationship: the beta drops from .31 to .24 or .18 respectively. In other words, the relationship between color and service quality can be explained by both emotional and cognitive processes.

Table 6.2: Mediation analyses confirm that the relationship between color and anticipated service quality is (partially) mediated by pleasure as well as cognitive appraisal.

Independent variables	**β**	***t***	***p***
Regression 1:			
Dependent variable: Service Quality			
Color (dummy coded)	.31	3.09	< .01
Regression 2a:			
Dependent variable: Pleasure			
Color (dummy coded)	.25	2.41	<.02
Regression 2b:			
Dependent variable: Environmental Appraisal			
Color (dummy coded)	.35	3.51	<.01
Regression 3a:			
Dependent variable: Service Quality			
Color (dummy coded)	.24	2.41	<.02
Pleasure	.28	2.81	<.01
Regression 3b:			
Dependent variable: Service Quality			
Color (dummy coded)	.18	1.79	.08
Environmental Appraisal	.38	3.75	<.01

Discussion

The results provide empirical evidence regarding the beneficial effects of a cool interior color on patient responses. First of all, the results indicate that participants inferred the level of service quality from wall color. Secondly, the study shows that color in the environment can alleviate anxiety and improve psychological wellbeing. We will first discuss inference processes based on environmental color. Then we will turn to the influence of color on psychological wellbeing and introduce study 2.

Inferential Beliefs

Study 1 shows that blue walls lead to improved service quality perceptions. In the SERVQUAL model, satisfaction with the tangible environment is considered one of the dimensions of service quality (Parasuraman et al., 1988). Since blue walls improved the appraisal of the environment, one would expect this effect. However, even when the tangibles dimension is omitted from the scale (i.e., when only considering the intangible dimensions of quality), an effect persists. In other words, people perceived a higher service quality in the blue room than in the white room, even when only intangible aspects of the service were considered. Mediation analyses confirmed that cognitive as well as

affective processes underlie this relationship. Consequently, this finding can be explained in two ways:

First, the increase in service quality may be the result of a halo-effect (Long-Tolbert, Till, & Swaminathan, 2006; Thorndike, 1920). The halo effect can be explained as a cognitive process in which the impression of one attribute shapes the impression of another independent attribute (Nisbett & Wilson, 1977). In this case, the appreciation of the tangible component of the service affects the appreciation of the intangible component of the same service. In other words, patients may simply *assume* that the intangible service component is of the same quality as the tangible component, and their service quality perception may be primarily based on this assumption. This intangible service component (e.g., the quality of the diagnosis, infection control etc.) is hard to appraise otherwise because it partly takes place 'behind the scene' and patients may lack specialist knowledge and information to truly determine its quality. Because the tangible component is highly visible throughout the service and easily appraisable, it is likely to be used as substitute information when appraising the intangible component (Zeithaml, 1988).

Secondly, the effects of color on service quality perceptions can be explained by the affect as information paradigm. In this view, affective reactions provide embodied information about value (Clore, Wyer et al., 2001). When experiencing positive affect, one's judgments seem to be more positive (Clore, Gasper, & Garvin, 2001). As such, mood has been found to affect our judgments and interpretations (Adaval, 2001). The effect of wall color on service quality perceptions can be the result of the improved affective experience that is the result of wall color. Negative affect experienced due to atmospheric cues may be attributed to the service provider, and lead to decreased service quality perceptions, while an environment that enhances the emotional experience (e.g., blue walls) improves service quality perceptions.

Psychological Wellbeing

Furthermore, this study confirms that blue walls in a hospital, when compared to white ones, alleviate anxiety and positively affect the emotional experience. As such, color in the care environment can improve psychological wellbeing. This means that findings from color research in lab settings seem to be applicable in a hospital setting and that blue triggers more positive responses than white.

However interesting these findings, study 1 suffered two limitations. First, in study 1 healthy students participated as subjects rather than actual patients. They were asked to

imagine undergoing treatment in a hospital. As some of the participants may have never been hospitalized before, this may have been troublesome. Yet, the findings provide face validity: anxiety is higher in the treatment room than on the ward. Still, the evidence would be more convincing when actual patients in actual settings were studied. A second limitation concerns the nature of the outcome measures in study 1. The procedure did not allow for other measures than self-reports. However interesting and meaningful these findings, in an actual healthcare setting, wall color is most important when it can contribute to the healing process and the outcomes of the care. As yet, it remains unclear whether and how the psychological benefits of blue (e.g., alleviated anxiety) translate into improved healing and shorter hospital stays. By easing anxiety and enhancing psychological wellbeing, contextual factors can stimulate patient recoveries and shorten hospital stays (Saravay, Steinberg, & Weinschel, 1991). In line with these findings, we propose that cool wall colors can shorten hospital stays when compared to white walls.

To test this hypothesis, a field study was conducted on a lung ward of a general hospital. Patients on a lung ward generally experience breathlessness due to derangements in the respiratory system. Dyspnea involves the feeling of a need for more air. it may range from minor irritation to functional incapacity (Murray, Nadel, Mason, & Boushey, 1988). This sensation is typically the result of derangements in the respiratory system that is caused by diseases such as asthma, COPD, lung tumors or pneumonia. The sensation of breathlessness may even result in the hyperventilation syndrome (Fishman, 1994). Dyspnea can be defined as *'a subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity. This experience is derived from interactions among multiple physiological, psychological, social, and environmental factors and may induce secondary physiological and behavioral responses'* (Meek et al., 1999). As such, dyspnea is a symptom that is influenced by psychological wellbeing (Carrieri-Kohlman, 2006).

Since ambient cues in the healthcare facility (e.g., wall color) can affect anxiety, they may also affect the subjective sensation of dyspnea. For example, some types of music have been shown to reduce breathlessness (Thornby, 1995). Relaxation training also proved to reduce dyspnea in the short term (Gift, Moore, & Soeken, 1992; Renfroe, 1988).

However, it is not feasible to expect that wall color leads to shortened hospital stays for all patients. Psychological wellbeing stimulates healing primarily for chronic patients such as COPD and asthma patients (Cole-King & Harding, 2001; Yohannes & Connolly, 2001). For chronic patients, that is, psychological wellbeing is one of the strongest

predictors of hospital utilization (de Boer, Wijker, & de Haes, 1997). This explains why the length of hospital stay for chronic lung patients is improved by contextual factors, such as psycho-educational care (Devine, 1996). In addition, quality of life proved to be an important predictor of hospitalization of chronic lung patients (Fan, Curtis, Tu, McDonell, & Fihn, 2002). Therefore, we expect that blue walls can shorten hospital stay for patients with chronic lung diseases (COPD and Asthma patients), but not for other lung patients (e.g., patients with lung cancer, pneumonia or pulmonary embolism).

In study 2, we conducted a field experiment to explore whether the beneficial effects of blue walls in a hospital can also translate into shorter hospital stays. To account for the two limitations of study 1, study 2 was conducted in an actual setting (i.e., a lung ward of a general hospital) with actual lung patients and we incorporated length of hospital stay as a health related outcome measure. Two four-bed nursing rooms at a mid-size general hospital in The Netherlands were painted blue (the exact same color as in study 1), while similar four-bed nursing rooms were painted white. In a retrospective study, data were gathered over a 15-month period. Length of hospital stay was observed, as well as the diagnosis and demographic variables of all patients. Since most patients were in a poor condition during their stay in the hospital, data were obtained from the hospital's administration data files, rather than from self-reports.

6.4 Study 2

Method

All patients that were administered at the hospital's lung wards between January 1st 2007 and March 13th 2008 were included in the study. To ascertain that all participants were exposed to only one color during their stay, we excluded all patients that were moved from one ward room to the other during their stay. Furthermore, we excluded all patients that did not spend at least one night in the hospital.

A total of 707 patients qualified to the abovementioned criteria (378 men, 329 women). Their age ranged from 18 to 91 years old with an average of 65,7 years (*SD* = 14,88). The patients suffered various lung diseases. Table 6.3 provides an overview of the lung diseases that the participants were diagnosed with.

Table 6.3: Overview of diagnoses

	Count	Percentage
COPD	217	30,7
Tumors	122	17,3
Pneumonia	112	15,8
Asthma	57	8,1
Pulmonary Embolism	47	6,6
Pleural Disorders	37	5,2
Pneumothorax	21	3,0
Dyspnea	9	1,3
Hemoptoë	9	1,3
Other diagnoses	76	10,7
Total	707	100

Patients spent an average of 8 days, 8 hours and 18 minutes in the hospital (*SD* = 6 days, 6 hours and 20 minutes). Rooms were assigned by the nursing staff based on the availability of free space. No mortality occurred in the sample.

In the summer of 2006 all walls in two four-bed ward rooms were painted blue. At the same time other ward rooms were painted white. The same colors were used as in study 1. The rooms were painted about 6 months before data collection to make sure personnel as well as patients were accustomed to the colors. To control for known effects of sunlight on patient responses (Benedetti et al., 2001), we counterbalanced the direction of the windows: windows in one of the blue rooms was facing north, while in the other one they faced south. Four out of eight white control rooms faced north, while the other four faced south (see Figure 6.1). All data were administered by hospital employees and derived from the hospital's archive.

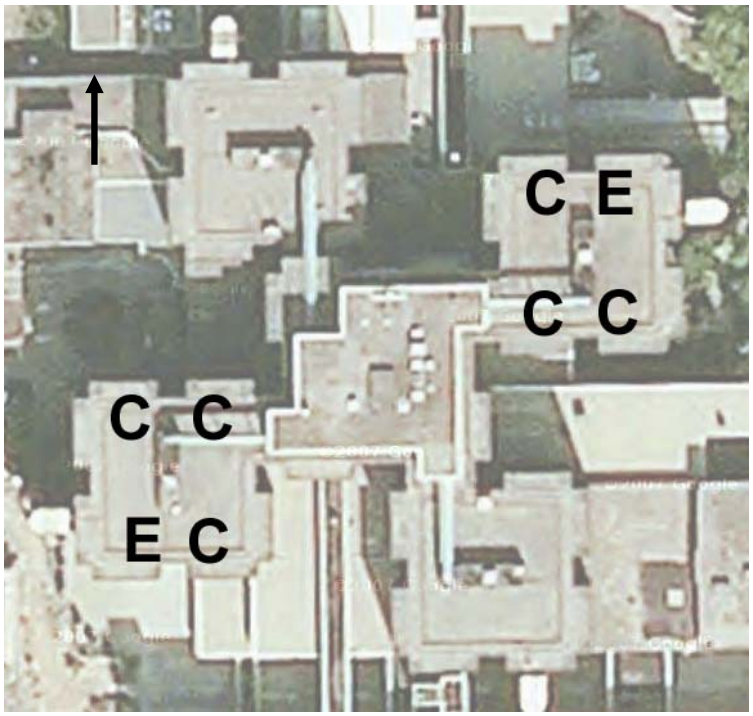


Figure 6.1: Layout of the positions of the experimental (E) and control (C) ward rooms. Picture derived from maps.google.com. The arrow points northwards.

Results

Regression analyses were performed in which wall color was dummy-coded (0 for white room, 1 for blue room). 164 Patients were administered to a blue room, while 543 patients spend their stay in a white control room. The first regression analysis was conducted among all 707 patients. The results are displayed in Table 6.4. As we can see, there is no significant effect of wall color when controlling for sex, ward, and age.

Table 6.4: Summary of Regression Analysis for variables predicting length of hospital stay.

Variable	**β**	***t***	***p***
Color	-.04	-1.04	.30
Sex	.05	1.25	.21
Ward	.02	.62	.54
Age	.25	6.85	<.01

R^2 = .07

To test whether wall color would affect patients with chronic rather than temporal lung diseases, we differentiated between chronic and non-chronic patients. The first group includes COPD (n = 217) and asthma (n = 57) patients. The latter group includes patients with lung tumors (n = 122), pneumonia (n = 112), pulmonary embolism (n = 47), pleural

disorders (n = 37), pneumothorax (n = 21), hemoptoë (n = 9), Dyspnea (n = 9), and other diagnosis (n = 76). We conducted the abovementioned regression analysis for both groups separately. The results are displayed in table 6.5.

Table 6.5: Regression analyses for variables predicting length of hospital stay for chronic (left) and acute lung patients (right).

Chronic Patients (n = 274)				Acute Patients (n = 433)			
Variable	β	*t*	*p*	Variable	β	*t*	*p*
Sex	.09	1.58	.12	Sex	.02	.36	.72
Ward	-.05	-.82	.41	Ward	.05	.99	.32
Age	**.32**	**5.51**	**<.01**	**Age**	**.24**	**5.03**	**<.01**
Color	**-.12**	**-2.10**	**<.04**	Color	-.01	-.13	.90
R^2 = .11				R^2 = .06			

Color has a significant effect on length of hospital stay for chronic lung patients. When controlling for sex, ward, and age, the average length of hospital stay is shorter in the blue nursing rooms, than in the white rooms. Examination of the average scores confirms this finding (see Figure 6.2): In the white nursing rooms, chronic patients spent an average of 9 days and 3 hours, while in the blue rooms they spent an average of 7 days and 14 hours. For the other patients we found no effect of wall color: They spent an average of 8 days and 2 hours in the white ward rooms, and an average of 8 days in the blue rooms.

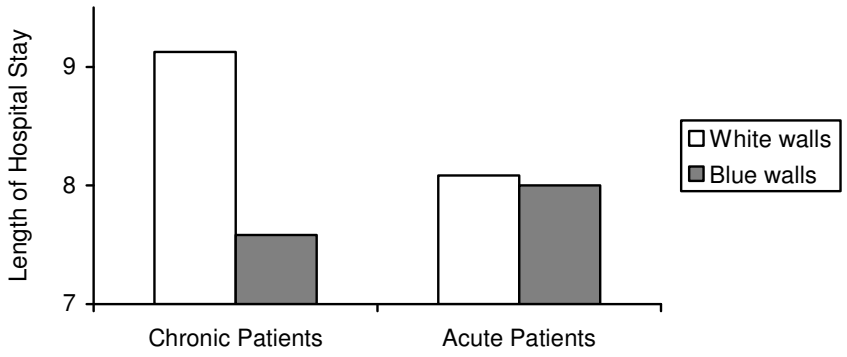


Figure 6.2: Length of hospital stay (in days) for chronic and non-chronic patients in the white and blue rooms.

6.5 General Discussion

In a field experiment, we examined the effects of wall color on lung patients' length of hospital stay. We found that a blue wall color decreases the length of hospital stay for chronic, but not for acute lung patients. This effect was rather large: for chronic lung patients, the length of hospital stay was reduced by 17%. Environments that shorten hospital stays directly generate cost benefits for hospitals (Elpern, 1998). However, such effects are not universal but depend on patient characteristics. Whereas wall color reduced the length of hospital stay for chronic lung patients, no such effect was observed for non-chronic patients. Because chronic lung diseases (i.e., COPD and Asthma) are difficult to reverse, management of the symptoms to improve quality of life are the most appropriate goal of the treatment (Murray et al., 1988). Since environments can aid in the management of symptoms it is likely that environmental factors shorten hospital stays only for chronic patients. We propose that the effect wall color on length of hospital stays can be explained in at least two ways. The first explanation is of a physiological nature, the second one is psychological.

Direct Physiological Effect

In previous studies, blue walls in the care environment were found to reduce physiological arousal, which manifested itself in reduced blood pressure, galvanic skin response, frequency of eye blink and –most important in this context- reduced respiration rate (Gerard, 1957). In the present study, lung patients may have experienced reduced respiration rates as a result of exposure to blue walls. Such a slower respiration rate may have alleviated the sensation of dyspnea and improved patients' control over the symptoms of their lung disease. This in turn may have led to a faster recovery for chronic patients and shorter hospital stays.

Indirect Psychological Effect

Secondly, blue walls may have shortened the hospital stays because of alleviated anxiety levels and enhanced psychological wellbeing (Stone, 2003). For a large part, bodily signs of illness are of a subjective nature (Morrison & Bennett, 2006). Sensations such as pain, breathlessness, numbness, and nausea require interpretation on the part of the patient (Radley, 1994). In line with the 'affect as information' paradigm (Forgas, 1995), we propose that the interpretation of somatic information depends on the experienced

emotions. Healthcare environments can positively affect the recovery process by altering the interpretation of somatic signs. For instance, by lowering patient anxiety, natural sights and sounds have been found to increase the pain threshold and tolerance to pain (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Park, Mattson, & Kim, 2002). In such a way, wall color can contribute to patient wellbeing without 'healing' the patient in the narrow sense of the word.

In this discussion, we have attempted to provide insight into the underlying mechanisms for the observed effects. However, in the present studies, no data have been gathered that verify the underlying process. Even though the reduction in hospital stay for chronic lung patients was considerable (17%), the results should be interpreted with great reserve: Even though it is plausible that anxiety and perceived breathlessness drive the effect, no anxiety or breathlessness measures were administered. More research is needed in which such data are combined with the length of hospital stays to confirm the underlying mechanism. Furthermore, future research should explore other environmental factors that may have the same effect and hence may benefit chronic patients.

Practical Implications

Many healthcare providers and designers have an intuition that interior color can serve as a psychotherapeutic aid in healthcare (Tofle, Schwartz, Yoon, & Mx-Royale, 2004). There is a great demand for universal color guidelines. Many practitioners have provided principles that are supposed to be universally applicable. However, the empirical base for such guidelines is usually remarkably thin (Calkins, 2002). Although much fundamental research has been conducted on the effects of color on emotions, applied research on the role of color as an environmental stimulus in healthcare facilities is scarce and findings are often contradictory (Tofle et al., 2004). This further illustrates that color influences are not universal, but depend on patient- as well as situational characteristics. In other words, rather than applying universal color guidelines, designers should consider the specific patient population as well as situational variables when deciding on a color scheme for a design. Furthermore, it is important for designers to realize that their efforts should be directed at alleviating patients' physiological and psychological anxiety. In other words, designers should consider the holistic setup of ambient cues in order to create a soothing atmosphere which has the potential to reduce hospital stays, primarily for chronic patients.

Conclusions

The present studies provide evidence for the beneficial influence of cool colors in healthcare settings. Not only can color improve psychological wellbeing, but it can also improve perceived service quality and even the length of hospital stay for chronic lung patients. Since atmospheric cues such as music and scent also have the potential to reduce anxiety (Burnett, Solterbeck, & Strapp, 2004; Wang, Kulkarni, Dolev, & Kain, 2002; White, 1992)), such factors may also decrease the length of hospital stay for chronic patients. The holistic configuration of atmospheric cues in a healthcare setting should be designed to reduce physiological and psychological anxiety. In that way designers can even contribute to reductions in hospital stays.

7

General Discussion & Conclusions

In the final chapter of this dissertation, we will give an overview of the findings. We will highlight the contributions for consumers, designers and service providers. Next, we will explain how the inferences that are found in the studies are a result of symbolic communication processes. Then we will give some attention to the matter of awareness of environmental stimuli. Finally, we will give practical recommendations and we will provide the conclusions of this dissertation.

"Although understanding that the environment, in a general sense, affects consumer response is helpful, it is necessary to go beyond general understanding to help service marketers make specific decisions about the service environment." (Kotler, 1987, p. 448)

Since Kotler made this statement in the late 80's, many researchers have tried to explain the ways in which environments affect consumers. Still, our comprehension of consumer responses to service environments is rather limited. This dissertation was written as an attempt to improve our understanding of the ways in which consumers are affected by the environment when they purchase a service. To do so, we developed a communication perspective on service environment in which we view the service environment as a means to transmit meanings to consumers. When deciding whether or not to purchase a service, a consumer searches for information to assess the quality, value and specifications of an offer (Zeithaml, 1988). However, before purchase, a service is not yet produced and, to a large extent, such information is unavailable or incomplete (Zeithaml et al., 2006). Since reliable direct information regarding service attributes is usually scarce (Zeithaml, 1981), a consumer has to rely on indirect cues in the service environment to assess search, experience and credence attributes (Erdem & Swait, 1998).

Throughout the first two chapters, we explained how service environments can be seen as acts of symbolic communication. Throughout the three parts of this dissertation, this perspective has been applied to a number of environmental cues (social, design, and ambient cues). The findings of these studies can help consumers, designers as well as service providers, to make better decisions.

First, the findings can enhance consumer understanding of the factors that influence them in service environments. In many instances, consumers are not aware of the cues that they use in the formation of service beliefs. This dissertation can help them to better understand their own inference processes and to take a more critical stance towards their use of environmental cues.

Secondly, the findings can be useful for designers of service environments: architects, interior designers, and coordinators of reconstruction projects. Even though much research addressed questions regarding the influence of environmental cues, even today, designers do not fully understand and use the service environment's communicative potential. By investigating social, design and ambient cues, we explored the breath of meanings that can be embedded in environmental cues. The findings suggest that service settings not merely signal the prestige, status or overall quality of a service, but that a

wealth of other meanings can be embedded in the tangible environments in which services take place. For instance, in this dissertation, environmental cues were found to affect perceptions of service providers, service prices, the expected levels and types of customer input, firm positioning, and service quality. In other words, service environments can affect a wide array of perceptions and expectations, which can be the result of the recognition of stereotypical environmental set-ups, but can also result from more fine-grained interpretation processes.

Finally, service providers can benefit from the insights reported in this dissertation. More insight into consumer inference processes enables marketers to skilfully use environmental cues to manage consumer beliefs. Because consumers' service beliefs are influenced by many environmental cues simultaneously, including previous experiences, advertising, and word-of-mouth communication, we argue for an integrated marketing approach. This means that, when planning the design of service environments, cues should be considered in combination with other marketing tools such as price, promotion, and people. An environment that is inconsistent with the firm's marketing mix can confuse consumers and decrease the expected utility (Erdem & Swait, 1998). Furthermore, as the most regular users of the service environment, service providers should be aware that their behaviors can leave traces that can be used as cues (Gosling et al., 2002).

In figure 7.1, the findings of this dissertation are placed within the Bitner's Servicescape framework (1992). A number of social, design, and ambient cues were manipulated in the experiments. These will be discussed in more detail below. We found that many responses were not universal, but moderated by response speed (chapter 3), the consumer's personality (i.e., openness to experience; chapter 5) and type of patient (chapter 6). As figure 7.1 clearly shows, emphasis in this dissertation was on cognitive responses. First of all (and most obviously), environmental cues affected beliefs about the service environment. However, participants also made inferences about service attributes (chapter 4 and 6) and the service provider (the service employee as well as the service firm). Finally, environmental cues were found to affect outcomes such as expected satisfaction and length of hospital stay.

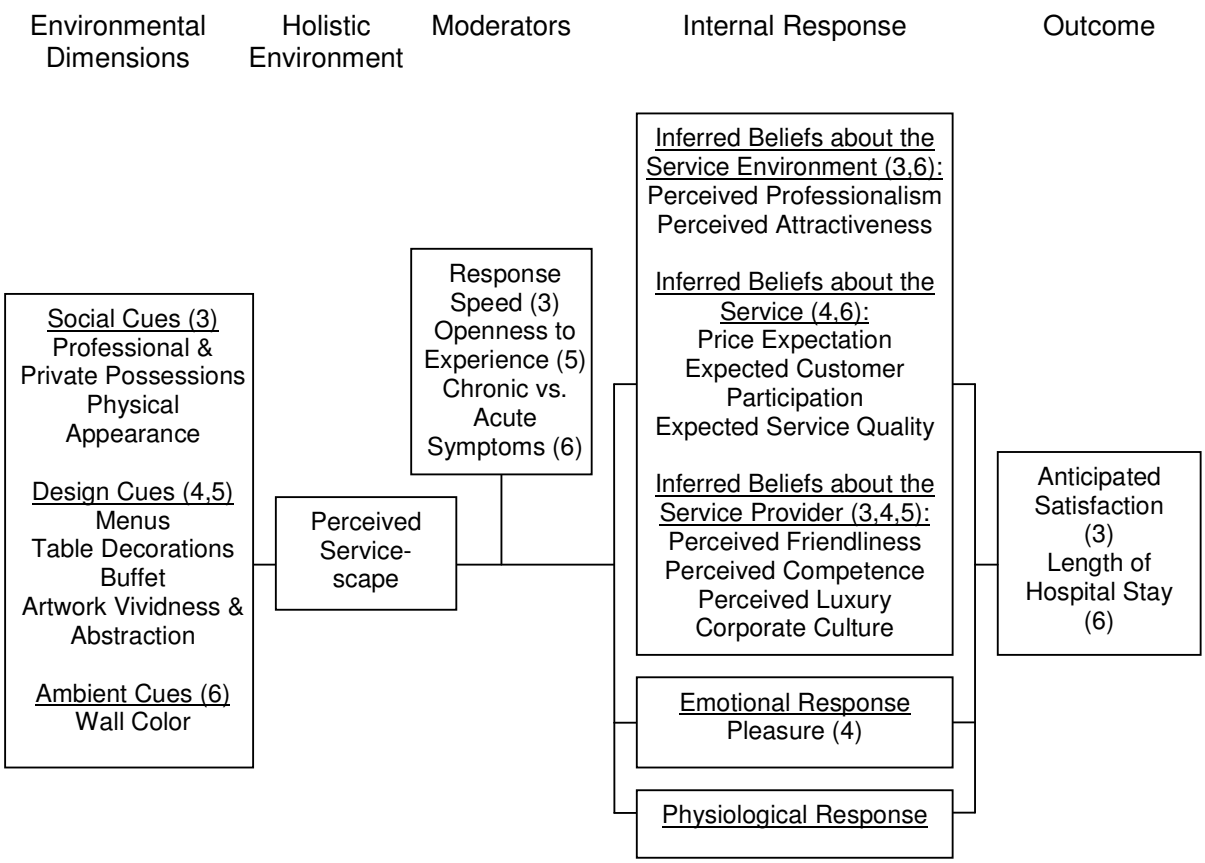


Figure 7.1: ServiceScape Model, adapted from Bitner (1992)

In this dissertation, Baker's taxonomy of environmental cues (Baker, 1987; Baker et al., 2002) was used to organize the empirical studies: the three parts of this dissertation deal with studies on the effects of social, design, and ambient cues respectively. In the next section, we will provide a short overview of the studies in each of the three parts.

7.1 Social Cues

The first type of environmental factors that are discussed in the dissertation are social cues. Social cues are tangibles in the service environment that are directly related to people (e.g., personal possessions, their territorial markers, or his or her bodily appearance). Throughout the studies in chapter 3, we showed how, in a healthcare service setting (i.e., a consultation room in a general hospital), consumers (i.e., patients) use personal possessions and bodily appearance of the service provider (i.e., the physician) as

social cues. These cues were used to form beliefs regarding the service provider's level of friendliness and competence.

Results suggest that when both visual sources of information are available (bodily appearance as well as personal possessions), bodily appearance is the most primary source of information; People are likely to base their perceptions first and foremost on bodily appearance. When this information proves to be inconclusive or unavailable, people turn to tangible symbols to gather further information. In line with this notion, we found that, whereas bodily appearance is likely to be processed in a rapid, snap-shot manner (cf. Todorov & Uleman, 2003), social cues in the service environment are most likely to be processed in later, more deliberate stages of processing. Although Kay et.al. (2002) showed that deliberate, conscious processing is certainly not always necessary for tangible objects to affect our perceptions and behaviors, we show that when tangible social cues are encountered in combination with other information regarding the target (i.e., bodily appearance), the observer will attend to these sources in the first (snap-shot) stages of processing, after which they consider the environmental social cues in secondary processing stages. In other words, we have shown that social cues in the tangible environment are influential with respect to the perception of service providers, but they are likely to be used as a secondary source of information when primary sources provide insufficient or inconclusive information. This does not mean that environmental cues are not important in influencing consumer beliefs. After all, in many service purchases, consumers have little information or unreliable information about the offering (Zeithaml, 1981). Because services are heterogeneous and usually not yet produced when consumers make purchase decisions (Zeithaml et al., 2006), such situations are not unusual. In such situations, consumers can not form descriptive or informational beliefs and they are to use environmental cues to form inferential beliefs. Furthermore, because (in the eyes of consumers) the quality of expert service depends heavily on the performance of the service provider (i.e., the expert), social cues are especially influential in expert services (Kellogg & Nie, 1995).

7.2 Design Cues

Secondly, the effects of design cues, such as the decorations or artwork, were addressed. Design cues are tangible elements of the environment that are not directly

related to people. In chapter 4, we show that by inferring functional and symbolic service benefits from environmental design cues, restaurant guests form price expectations. Such price expectations resulted from the expected level of required customer effort and expectations regarding the level of luxury of the restaurant. In chapter 5, we were not concerned with the influence of the presence of design artefacts per se, but with the influence of the appearance of design cues. We showed that the type of artwork displayed in a service environment (i.e., advertising agency) symbolizes the type of organisation and the type of service offering. More specifically, an artwork's vividness and abstraction are used to infer corporate culture, service-, and firm attributes. Evaluations based on such environmental inferences differed across people: they depended on the personality trait openness to experience.

Throughout the studies in the second part of this dissertation, it becomes apparent that the influence of environmental cues on consumer behaviors can not be considered unequivocal. In chapter 5 it became clear that a design cue (i.e., the vividness of a painting) can trigger positive service beliefs (i.e., in terms of excitement), while at the same time causing negative beliefs (i.e., in term of soundness of the service offering). In other words, service environments should not merely be seen as attractive or unattractive, or as attracting or driving away consumers. The influence of design cues on consumers can be better understood as an act of symbolic communication or as a transfer of information regarding the service firm and the service offering.

7.3 Ambient Cues

Finally, the effects of ambient cues are discussed in chapter 6. Ambient cues are intangible background conditions of an environment such as temperature, color, and scent. They affect consumers largely outside of their conscious awareness (Baker, 1987). First, in a scenario study, we showed that by enhancing environmental appraisal, color can increase perceived service quality. This indicates that consumers' aesthetic impressions are 'transferred' from the tangible surroundings onto the service at large. The consumer simply expects that the –mostly invisible- characteristics of the service are of the same level as the tangible service environment. As such, ambient cues that enhance the environmental appraisal also improve the anticipated quality of the service.

The effects of ambient cues can best be understood by considering the emotional response they trigger. Soothing ambient conditions (i.e., blue wall color) can reduce arousal, which can improve psychological wellbeing. As the final study of this dissertation shows, this may even lead to decreased hospitalization. Through a field experiment on a lung ward of a general hospital we found that blue walls did indeed decrease the length of hospitalization. However, this effect was observed for chronic, but not for acute lung patients. Whereas the length of hospitalization of chronic patients is affected by psychological wellbeing, no such an effect is observed for acute patients. Although we propose that this effect is driven by psychological well-being, no data were gathered to confirm this underlying mechanism. This study indicates that if designers want to encourage healing, their designs should first and foremost cater to specific psychological and emotional needs of patient groups. Whereas a soothing environment can alleviate breathlessness and encourage recovery for chronic lung patients, it is unlikely that ambient cues will affect hospitalization of acute patients.

The studies in chapter 6 draw our attention towards the aesthetic value of service environments (Berlyne, 1971; Nasar, 1988). While attractive ambient cues improve service beliefs, unattractive ambient conditions induce negative service beliefs (see study one of chapter 6). At the same time, ambient conditions affect emotional states of consumers (Mehrabian & Russell, 1974; Ulrich, 1983): not only can the attractiveness of a service environment improve the perceived quality of the service (chapter 6, study 1), but ambient cues can also trigger specific emotions, such as calmness (Küller et al., 2009). This reduced anxiety can even result in reduced length of hospitalization of chronic patients (chapter 6, study 2). Emotional responses can also play a direct role in symbolic communication: experienced emotions can provide affective feedback which can be used as information when purchasing a service. We will elaborate on emotional responses to environmental cues further on in this discussion.

In sum, social, design, and ambient environmental cues can all serve as information cues in consumer information search. In practice, upon entering a service environment, one will first and foremost perceive the holistic set-up of environmental cues (Lin, 2004). In the initial phases of processing, inferences are based on the categorization of the service environment. For instance, in chapter 4, we saw that people categorized the restaurant as luxurious and inferred the price from this categorization process. In subsequent fine-grained processing phases, consumers interpret more detailed information from the

environment and assess the meanings of those details. For instance, one takes a closer look at the paintings in the service environment or at the personal possessions that are at display and infers the corporate culture or the personality traits of the service provider (see chapter 5 and 3, respectively). Initial impressions are based on cues that are processed in the early stages, environmental cues that are processed in later stages are used to update this initial perception (Johar, Sengupta, & Aaker, 2005). In chapter 3, we show how the service provider's appearance is processed before the service environment is attended to.

After this summary of the findings of the studies, we will turn to the question what processes underlie these effects. By mediation analyses and a structural model, we have attempted to confirm some of the underlying processes. However, not all studies provide conclusive evidence with regard to the underlying processes. Therefore, at the end of this chapter, we have formulated recommendations for research to further unravel the underlying mechanisms.

7.4 Processes of Symbolic Communication

As the studies have shown, environmental cues can serve as symbols, enabling firm-consumer communication: Consumers infer service and firm attributes from the symbolic meanings conveyed by social, design, and ambient cues. As discussed in chapter two, these symbolic meanings are based on (1) social conventions, (2) intrinsic meanings, and (3) associations with behaviors. In this discussion, we will explicate how participants in the studies have used these meanings to infer service beliefs from. The symbolic meanings of environmental cues can result in consumer inferences in (at least) three ways. First, environmental inferences can be based on the direct transfer of meanings from the environment to the service (firm). Secondly, inferences can be the result of associative processes. Finally, inferences can be explained by the emotions that are triggered by environmental cues.

Transfer Effects

Through research in fields such as sponsorship (Smith, 2004) and celebrity endorsement (McCracken, 1989) it has become evident that due to a parallel exposure, (brand) attributes can automatically transfer from one entity (e.g., a celebrity) to the other

(e.g., the brand). Image can transfer from one brand to the other via brand extensions and co-branding. Such transfer of meaning relies on associations from the core brand transferring to the new brand (Aaker & Keller, 1990). Similarly, attributes of the tangible environment can transfer to service (firm) perceptions. After all, some attributes of the service environment can also be applied to the service experience at large. For instance, the 'cheerfulness' of a service environment can be transferred to the anticipated service experience: a consumer may expect a more cheerful service experience when the environment is cheerful. In chapter 5 of this dissertation, the impressions of the paintings are directly transferred to service firm beliefs: the display of a vivid (tranquil) painting led to the impression of a vivid service firm.

Similarly, a positive appraisal of an environment can translate into a positive appraisal of the service (firm) or the people in that environment (Maslow & Mintz, 1956). Previous studies have illustrated how a positive appraisal of ambient cues such as music (Gorn, 1982) and scent (Spangenberg, Crowley, & Henderson, 1996) in the environment can lead to enhanced evaluation of the service. In chapter 6, an effect was observed of color on service quality beliefs. This effect was mediated by environmental appraisal, which indicates that the positive evaluation of the environment was transferred to the anticipated service. This transfer can be a result of a HALO-effect (Balzer & Sulsky, 1992; Long-Tolbert et al., 2006; Thorndike, 1920). Because more reliable information about the service is lacking, consumers simply assume that the service has the same qualities as the service environment.

Associative Processes

While some inferences are based on the direct transfer of meaning, others are the result of associative processes. Whereas transfer effects concern the direct projection of the environmental appraisal onto the service (firm), associative processes are the result of a conversion from an environmental attribute to a service (firm) belief. Associative network theory can be used to explain this type of inference: Environmental attributes are usually known by consumers (i.e., objects, shapes, colors etc.): They are stored in their long-term memory (Baddeley & Mehrabian, 1976). Associative Network Theory (Anderson, 1983a; Collins & Loftus, 1975; Srull & Wyer, 1989) posits that information in memory consists of individual pieces of information called nodes. These nodes are linked to one another through a network of associations. Information is recalled when it is stimulated or activated

(de Groot, 1989). When a node is stimulated, it prompts thinking about associated nodes. This phenomenon is known as 'spreading activation' (Anderson, 1983b).

Information about service environments is stored in such associative networks. Perception of an environmental cue will activate the nodes in memory as well as nodes that are associated with it (Raaijmakers & Shiffrin, 1981). The activation of these associated constructs translates into service beliefs. For instance, environmental cues such as objects (e.g., chandeliers) or materials (e.g., gold or marble) are usually associated with luxury or prestige. The activation of 'chandelier' in memory spreads to the activation of constructs such as 'luxury', 'exclusive', and 'expensive'. Such spreading activation causes consumers to infer that the service is of a specific type and comes with the associated price tag. In order to understand what inferences people draw from environmental cues, one needs to know what the associative network looks like.

In chapter two, we argued that tangibles are associated with concepts in memory on the basis of (1) social conventions, (2) intrinsic characteristics or (3) behaviors. Throughout the studies, we have found support for these notions.

First of all, associations may be based on social conventions. From early childhood on, people form conventions which help them to interpret social experiences (Turiel, 1983). These conventions make it easier for people to function in their social environments. For example, throughout childhood, people learn conventions regarding the appropriateness of certain behaviors. People have also learned conventions regarding the appearance and characteristics of services and service environments (Ward et al., 1992). These conventions enable people to recognize service settings, gather information in such a setting, and perform their role as a customer. For instance, people have learned what barbershops or restaurants look like, what their procedures are, and what type of people usually work there. Not only have consumers learned what service settings look like, they also have learned conventions about what *types* of service settings look like (Ward et al., 1992). In their minds, tangible attributes are associated with the service type, which is associated with service characteristics (e.g., price, procedure, quality) on the basis of social conventions. When perceiving a service environment a consumer recognizes, the memory trace is activated as well as the associated constructs (i.e., service characteristics). The activation of these constructs will lead to inferences regarding the service.

Chapter 3 illustrated how personal possessions in a doctor's consultation room signal the personality of this doctor. Objects such as diplomas, books, scientific articles have

become associated with competence because of learned social conventions. Objects that are expressive of personal interests and tastes, on the other hand reinforce the image of a friendly empathetic person. Likewise, due to social conventions, a painting's vividness affected expectations regarding the soundness of a service solution. Interestingly, at the same time, due to a relatively simple transfer effect, the vividness of a paining affected the perceived excitement of the firm. So, while the vividness of a paining improved the perception of the service provider in terms of excitement, it actually aggravated the perception of the service in terms of soundness. This example illustrates how environmental cues may not simply improve or aggravate service perceptions, but environmental cues rather send a symbolic message about the service firm that can contain positive as well as negative attributes. Likewise, in restaurants (see chapter 4), objects such as elaborate sets of silverware or tall wine glasses, symbolically convey luxury or prestige. Hence, consumers infer prices from such symbolic cues on the basis of social conventions. Although people's associations with colors (chapter 6) may partly be based on intrinsic characteristics, many meanings associated with colors are based on culturally learned conventions (Wyszecki & Stiles, 2000).

Secondly, associations can be based on intrinsic characteristics of the tangible service environment. Gibson's theory of direct perception suggests that meaning can be inherent in a person-environment system and can be directly derived from the perception of environmental objects (Bruce et al., 2003). For instance, colors can be associated with concepts simply because of their inherent characteristics (e.g., wavelength or brightness); blue is associated with calm because of the wavelength of the light that it reflects (Bellizzi & Hite, 1992; Crowley, 1993). Likewise, objects can carry meanings that are used for service inferences because of their feel or smell. As such, tangibles are associated with meanings, not because of some external convention or arbitrary 'rule', but merely because of the inherent characteristics.

Finally, associations may result from behaviors that tangibles allow or afford (Gibson, 1979). In a service setting, environmental cues are particularly useful to signal what behaviors are appropriate during service delivery (Kelley et al., 1990). As the restaurant study shows (chapter 4), a buffet can signal the amount of customer involvement required for successful service delivery. Such an environmental cue is associated with certain behaviors because it enables or affords customers to perform these acts. For instance, a buffet signals that the customer is to be actively involved in the service realization because the buffet affords scooping up a meal. Such behavioral signals can inform consumers

about service procedures and this information can be used for inferences regarding price and quality, for instance.

Emotions

Thirdly, consumers may draw inferences regarding a service based on the emotions that they experience during their stay in a service setting (Mehrabian & Russell, 1974). These emotions can result from the appearance of the service environment. An attractive environment will lead to more positive emotions than an unattractive one (Kim & Moon, 2009; Mehrabian & Russell, 1974). Not only can positive (negative) emotions result in more positive (negative) service appraisals, but the type of emotion experienced may also be a source of information that may be used when assessing the service (Clore, Gasper et al., 2001). In a discotheque, for instance, a visitor may experience high arousal and may use these emotions as information when evaluating the nightclub. As such, experienced affect provides conscious information regarding the service.

Service judgements that require heuristic or substantive processing are most likely to be affected by the experienced affect (Forgas, 1995). On the other hand, the retrieval of pre-existing evaluations and judgments that are strongly driven by motivational pressures are hardly or not influenced by experienced affect. Furthermore, emotion affects judgements especially when it involves the generation of new information rather than the 'passive conservation of information given' (Fiedler, 1990, pp. 2-3). Service judgments are especially prone to environment-induced affect when consumers have little or no pre-existing knowledge about the service and they are unbiased prior to entering the service setting.

In this dissertation, we found that emotions were most important in explaining the effects of ambient cues (chapter 6). However, in chapter 3, we also found that social cues that induce perceptions of a friendly care provider also improve the emotional experience of the service encounter. In other words, the meanings that are inferred from environmental cues can also induce emotions that affect service beliefs.

Before elaborating on the methodological concerns, we will discuss to what extent consumers are aware of the symbolic communication processes addressed in this dissertation.

Awareness of Symbolic Communication

Environments can offer large amounts of information that require considerable processing capacity (Gibson, 1979). When entering an environment, especially a complex one, we may be faced with more information than our consciousness can handle. Therefore, out of all available stimuli, we select a relatively small, manageable portion that we direct our attention to. Usually, our attention is not even fully devoted to environmental stimuli. In some situations, we can in fact be quite unaware of our surroundings (e.g., when you are involved in a very lively, absorbing conversation with a service provider, or when you are watching a movie in the cinema). In other situations, we devote our full attention to the physical environment (e.g., when someone is showing you around in a new apartment, or when taking a sightseeing trip in Rome). To a large extend, environmental perception occurs outside of our conscious awareness (Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005). As a consequence, consumers' cognitions and emotions can be altered by environmental elements that he or she does not detect at a conscious level (Donovan & Rossiter, 1982; Gardner & Siomkos, 1985). For example, in material priming studies, although people were largely unaware of the presence of business objects, they resulted in more competitive bargaining (Kay et al., 2004). We are usually especially unaware of ambient background characteristics of environments such as temperature, lighting, music, and scent (Gulas & Schewe, 1993; Turley & Milliman, 2000). Nevertheless, as chapter 6 illustrates, these background stimuli can influence cognitions, emotions as well as physical wellbeing. We propose that consumers can infer service beliefs through conscious as well as unconscious processing of environmental cues.

7.5 Methodological Concerns & Recommendations for Future Research

The processes through which consumers construe meaning from environmental symbols are not yet fully understood. In line with symbolic interactionism (Blumer, 1969), we propose that these meanings are the result of previous interactions with the environment and service providers. This means that, rather than passively absorbing the information an environment offers, perceivers serve a role as active agents, in the sense that they are, consciously or subconsciously, seeking cues in the environment which help them to construe their perceptions (Brunswik, 1956). This implies that the effects of the

tangible environment may be highly personal and situation- and culture-specific. However, some environmental meanings are shared by many, for example, meanings of color are remarkable similar across cultures (Adams & Osgood, 1973; Madden, Hewett, & Roth, 2000). The effects of environmental cues that are found throughout the studies of this dissertation are most likely the result of meaning-systems that are shared by many in the population (consumers).

Research into the consumer interpretation of environmental cues can prove especially fruitful in improving design decisions: Practical decisions concerning social, design, and ambient cues in service environments are still usually based on intuitive beliefs about the appropriateness and appeal of cues. Because these presumed meanings not always correspond with actual meanings, a firm's service environment may induce undesired perceptions and signal information that are inconsistent with the firm's desired or real identity. Therefore, we argue for the pretesting of environmental designs so that designers better understand the interpretative processes that underlie consumer responses. Such insight will help designers use the environment's potential to reinforce a desired identity. By viewing environmental cues as symbolic communication, designers can become more skilful in using the environment's potential to reinforce a desired image in the minds of consumers.

In this dissertation, we have conducted positivistic, quantitative research to learn about the ways in which consumers infer service attributes from environmental symbols. Through experiments, we confirmed that consumer perceptions depend on environmental cues. This approach can also be useful when designers want to 'pretest' their design plans to learn what inferences consumers base on these interiors. However, in future research, it may prove helpful to focus onto the complex, interpretative nature of environmental meanings by applying qualitative methods, such as interviews, focus groups and participant observation in order to improve our understanding of underlying sense-making processes. For example, in future research, participants could be confronted with different types of environmental set-ups and participants (i.e., consumers) should be encouraged to think aloud about the service attributes that they infer from the set of environmental cues that they encounter. In such a way, one could learn more about the ways in which the cues simultaneously make up holistic impression and how the context in which a cue is encountered affects the interpretation of such a cue.

Furthermore, many questions remain unanswered concerning the prevalence of information sources in inference processes. In part one, we found that environmental cues

are used after a consumer has already attended to the service provider's personal appearance. Little is known about the prevalence of social, design, and ambient cues in comparison with sources such as advertising, word-of-mouth communication, employee behaviors, behaviors of fellow customers etc. In future research it is important to assess what cues are used to form initial impressions and what cues are used to update the initial perceptions. Such knowledge would help to assess the true extent to which consumers are affected by environmental cues, and it may help to predict interactive effects of several environmental cues.

When conducting experiments into the influence of environmental cues, one has to decide between using actual or simulated service environments. Most studies in this dissertation relied on simulations of service encounters. While simulation methods allow for full experimental control, ensuring a high reliability of the findings, the ecological validity may be at risk. After all, some service experiences are so rich and complex that it may be hard to imagine undergoing that experience at the moment you are in a research lab behind a computer. The challenge is to create an experience for the participant that resembles the actual encounter as much as possible. To do this, we employed various simulation methods. We used photos as well as 360 degree panoramas to simulate service experiences. While techniques to simulate environments in 3D are becoming more and more accessible and easy-to-use, more accurate and sophisticated environments can be presented to participants while maintaining full experimental control over the experimental stimuli. Still, with respect to external validity, nothing beats the actual service experience. Therefore, many of our findings deserve replication in field experiments.

At the same time, techniques to measure physiological responses to environmental stimuli have become more sophisticated and more easy to use. While direct physiological responses to (service) environments remained outside the scope of this dissertation, a better understanding of the bodily experience of a stay in an environment may greatly enhance our understanding of the cognitive inference processes at hand.

Concluding Remarks

To conclude, the current research demonstrates, in simulation studies and in a field experiment, that servicescapes affect a wide variety of consumer beliefs. We have developed a communication perspective to better understand the ways in which consumers' beliefs and expectations are influenced by the environment in which the service takes place. A better understanding of the processes through which consumers are affected by their surroundings could open new doors towards the use of the servicescape as a marketing tool, affirming the firm's desired identity.

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Samenvatting

(Summary in Dutch)

We brengen een groot deel van ons leven in dienstverleningsomgevingen door: Zo reizen we met de trein, brengen een bezoek aan de bioscoop, gaan naar het spreekuur van een arts of gaan uit eten in een restaurant. Bij het kopen van een dienst weet je vooraf doorgaans niet precies hoe die dienst eruit ziet en wat de kwaliteit zal zijn. Voordat je de dienst koopt is het bijvoorbeeld niet te voorspellen of de trein op tijd zal rijden, of de film wel zo goed zal zijn als de recensies beweren, of de arts competent en vriendelijk is en hoe duur het etentje uit zal vallen. Om toch een goede beslissing te nemen, gaan consumenten op zoek naar informatie over de dienst. Ze gaan hierbij als detectives te werk: ze speuren de omgeving af op zoek naar aanwijzingen. De tastbare omgeving waarin een dienst wordt verleend bevat symbolen die door consumenten worden gebruikt om verwachtingen over de dienst te formuleren. Mensen verlenen betekenis aan de omgevingen die ze waarnemen door ze te categoriseren en door de symbolen in die omgeving te interpreteren. Op basis van deze betekenisverlening vormen consumenten '*inferential beliefs'*. De consument vormt verwachtingen over de dienst, medewerkers en de dienstverlenende organisatie op basis van aanwijzingen in de tastbare omgeving.

In dit proefschrift onderscheiden we drie typen stimuli in de omgeving: sociale cues, design cues en atmosferische cues. Sociale cues horen bij mensen in de omgeving. Het gaat hierbij bijvoorbeeld om persoonlijke bezittingen of de persoonlijke werkomgeving. Vaak worden deze sociale cues waargenomen in combinatie met de dienstverlener zelf. Daarom hebben we sociale cues onderzocht tezamen met het uiterlijk van dienstverleners. Design cues zijn aanwijzingen in de omgeving die niet direct betrekking hebben op de medewerkers. Deze cues worden door consumenten vooral gebruikt bij de categorizatie van de organisatie. Naast sociale en design cues, hebben we in dit proefschrift ook onderzoek gedaan naar atmosferische cues. Dit zijn (veelal ontastbare) kenmerken van de dienstverleningsomgeving die primair invloed hebben op de fysiologische en emotionele beleving van een ruimte, maar ook input kunnen leveren voor inferential beliefs.

In **hoofdstuk 1** bespreken we welke rol tastbare cues spelen in een dienstverleningssetting. Het servicescape model van Bitner (1992) wordt besproken en er wordt dieper ingegaan op Baker's taxonomie van omgevingscues (1987). Met gebruikmaking van de information economics benadering (Stigler, 1961), wordt uitgelegd welke rol omgevingscues spelen als een indirecte bron van informatie in het dienstverleningsproces.

In **hoofdstuk 2** wordt aandacht besteed aan de cognitieve verwerking van omgevingscues. Dit proces wordt getypeerd als een 'coarse-to-fine' process (Navon, 1977): Mensen verwerken de tastbare omgeving eerst holistisch en grof, waarna ze meer fijnmazig te werk gaan. Allereerst construeren consumenten een totaalbeeld en categoriseren ze de ruimte. Niet alleen kennen consumenten algemene categorieën toe aan de omgeving ('dit is een restaurant'), maar de omgeving wordt ook in meer specifieke termen gecategoriseerd ('dit is een klein, luxueus full-service restaurant met een Franse keuken'). Allerlei verwachtingen m.b.t. het prijsniveau en de menukaart kunnen zijn gebaseerd op dit categorisatie-proces.

Na deze fase volgt een meer fijnmazige verwerking van de omgeving. In deze fase worden symbolische betekenissen toegekend aan omgevingscues. Symbolische betekenissen van tastbare omgevingen kunnen zijn gebaseerd op (1) sociale conventies, (2) intrinsieke kwaliteiten, en (3) associaties met gedrag. Sociale conventies zijn 'regels' die consumenten leren via voorgaande ervaringen met dienstverleners. Zo staan dikke handboeken en schaalmodellen in de spreekkamer van een arts voor professionaliteit. Intrinsieke betekenissen verwijzen niet naar bepaalde externe entiteiten, maar naar de betekenissen die verscholen liggen in de vorm en eigenschappen van het voorwerp zelf. Zo kan de mate van stimulatie en de manier waarop omgevingsinformatie wordt verwerkt invloed hebben op de verwachtingen van mensen met betrekking tot de dienstverlener. Tot slot kunnen betekenissen ontleend zijn aan bepaalde associaties met gedrag. Zo kan een buffet in een restaurant een signaal afgeven dat een gast geacht wordt om zelf een actieve rol te vervullen in de service realisatie en dat dat een lager prijsniveau tot gevolg heeft. In de drie delen van het proefschrift (hoofdstuk 3 tot en met 6) worden de studies gerapporteerd die zijn uitgevoerd naar de invloed van respectievelijk sociale, design en atmosferische cues.

Deel 1: Sociale Cues

In **hoofdstuk 3** wordt verslag gedaan van drie laboratoriumexperimenten naar sociale cues in de context van de spreekkamer van een longarts. De eerste studie toont aan dat persoonlijke bezittingen zoals een miniatuur schip en Afrikaanse beeldjes een beeld bevestigen van een vriendelijke arts, terwijl professionele objecten zoals handboeken en schaalmodellen een beeld bevestigen van een competente arts. Deze beide impressies hebben invloed op de gepercipieerde kwaliteit van de dienst. In studie 2 werden interactieve effecten van bezittingen (persoonlijk of professioneel) en uiterlijk

(vriendelijk of competent) onderzocht. Uit deze studie bleek dat consumenten verschillende strategieën hanteerden om informatie uit beide bronnen te combineren tot een betekenisvolle impressie. Voor een vriendelijkheidsoordeel wordt bijvoorbeeld alleen het uiterlijk van de dienstverlener gebruikt, terwijl persoonlijke bezittingen nauwelijks een rol spelen. Voor competentieoordelen worden beide bronnen gecombineerd. Uit studie 3 bleek dat persoonlijke bezittingen, in tegenstelling tot het uiterlijk, niet in de onmiddellijke, automatische fase werd verwerkt, maar in een latere, meer bewuste fase. In deze fase wordt de eerste indruk aangepast. Sociale cues in de omgeving worden dus gebruikt als een indirecte bron van informatie en worden verwerkt nadat consumenten een eerste indruk hebben gevormd op basis van bijvoorbeeld het uiterlijk van de dienstverlener.

Deel 2: Design Cues

In **hoofdstuk 4** worden twee labexperimenten beschreven naar de invloed van design cues op verwachtingen met betrekking tot de dienstverlening in een restaurant. Meer specifiek ging het om de invloed van symbolische en gedragsmatige cues op prijsverwachtingen. In deze studies vonden we bewijs voor twee beïnvloedingsroutes: Ten eerste worden de tafelaankleding en de beschrijvingen van gerechten op de menukaart gebruikt als symbolische cues bij het vormen van prijsverwachtingen. Deze prijsverwachtingen zijn het gevolg van een categorisatieproces: op basis van deze design cues wordt het restaurant gecategoriseerd als luxueus of eenvoudig. Prijsverwachtingen zijn gebaseerd op deze categorieën. Daarnaast worden prijsverwachtingen gebaseerd op gedragsmatige design cues: de aanwezigheid van een buffet wordt gebruikt om de verwachte gedragen uit af te leiden. Omdat een buffet een signaal is dat gasten een actieve rol moesten vervullen bij de realisatie van de dienst, verwachten consumenten een lager prijsniveau. Kortom, in hoofdstuk 4 worden twee manieren beschreven waarop de aanwezigheid van alledaagse design cues van invloed zijn op consumentenpercepties.

Waar in hoofdstuk 4 de invloed van alledaagse design cues centraal stond, gaat het in **hoofdstuk 5** om de invloed van kunst op consumentencognities. Bovendien gaat het in dit hoofdstuk niet om de aan- of afwezigheid van design cues per se, maar om de invloed van specifieke kenmerken van die design cues. Meer specifiek hebben we in hoofdstuk 5 aangetoond dat de levendigheid van kunstwerken in een reclamebureau een positieve invloed heeft op geanticipeerde creativiteit, maar een negatief effect op geanticipeerde degelijkheid. Bovendien leidt abstracte kunst ertoe dat consumenten de organisatiecultuur beoordelen als rationeel en hiërarchisch. De interpretatie en evaluatie van abstracte en

figuratieve kunst hangt in sterke mate af van de persoonlijkheid van de consument: De verschillen tussen abstracte en figuratieve kunst zijn het grootst voor mensen die zich open stellen voor nieuwe ervaringen ('openness to experience').

Uit deel 2 van dit proefschrift blijkt dat consumenten zowel alledaagse als buitengewone (kunst) voorwerpen gebruiken bij het vormen van inferential beliefs. De aanwezigheid van design cues kan holistische oordelen beïnvloeden en leiden tot categorisatie van de service setting. Echter, ook de uiterlijke verschijningsvorm van design cues leidt tot allerlei inferenties over de organisatiecultuur en de kenmerken van de dienst. Bovendien blijkt de interpretatie van kunst af te hangen van de persoonlijkheid van de consument.

Deel 3: Atmosferische Cues

Hoofdstuk 6 gaat over de invloed van atmosferische cues - meer specifiek, kleur- op overtuigingen van patiënten, hun psychologische welbevinden en ligduur op een verpleegafdeling van een algemeen ziekenhuis. Uit voorgaand onderzoek blijkt al wel dat koude kleuren fysiologische en psychologische spanning kunnen reduceren. In studie 1 werd door middel van een scenariostudie aangetoond dat een blauwe muurkleur leidt tot positief affect en een hogere geanticipeerde dienstenkwaliteit door een verhoogde omgevingswaardering. Terwijl directe informatie met betrekking tot de kwaliteit van de zorg in dit scenario volledig ontbrak, baseerden mensen hun verwachting van kwaliteit op de indruk die de omgeving bij hen wekte. Omdat een blauwe omgeving een betere indruk achterliet, werd een hogere kwaliteit verwacht. De positieve indruk wordt dus als het ware overgedragen van de omgeving op de dienstenkwaliteit. Studie 2 is een veldexperiment waaruit bleek dat de ligduur van chronische (maar niet van acute) longpatiënten aanzienlijk lager was in een blauwe dan in een witte verpleegkamer. Uit deze studie blijkt dat deze relatief eenvoudige, goedkope ingreep voor chronische longpatiënten leidt tot een reductie van de ligduur in het ziekenhuis van 17%.

Discussie

In deze dissertatie hebben we een symbolische communicatie benadering geïntroduceerd en ontwikkeld om de effecten van tastbare cues op consumentencognities aan te tonen en beter te begrijpen. De tastbare dienstverleningsomgeving zien we als een communicatiemiddel dat gebruikt kan worden voor de overdracht van informatie naar consumenten. Sociale, design en atmosferische omgevingscues worden waargenomen en

geïnterpreteerd als een uiting van de min of meer stabiele identiteit van de dienstverlener en de organisatie.

Terwijl de symbolische betekenissen van *sociale cues* vooral worden gebruikt om een beeld te vormen van de dienstverleners, worden *design cues* hoofdzakelijk gebruikt om een beeld te vormen van de dienstverlenende organisatie. Oordelen over de dienst worden vaak gebaseerd op de categorisatie van de organisatie.

Atmosferische cues vormen niet alleen een bron van informatie waarop consumentenoordelen zijn gebaseerd, maar ze beïnvloeden ook het fysiologische en psychologische welbevinden van consumenten in die omgeving. Voor chronische patiënten bij wie symptoombestrijding het voornaamste doel van de behandeling is, leiden deze effecten zelf tot een gereduceerd verblijf in het ziekenhuis.

In deze dissertatie hebben we aangetoond hoe dienstverleningsomgevingen invloed hebben op een breed scala aan consumentenreacties, zoals de gepercipieerde kwaliteit van de dienstverlening, verwachtingen over het prijsniveau, verwachtingen over de persoonlijkheid van de dienstverlener, de gepercipieerde organisatiecultuur, de categorisatie van de organisatie en zelfs de ligduur van chronische longpatiënten. Omgevingscues zijn dus een erg buikbaar middel voor (marketing) managers om allerlei consumentenovertuigingen te beïnvloeden en een gewenste identiteit uit te stralen. Door deze effecten te zien als uitingen van symbolische communicatieprocessen kunnen we beter begrijpen hoe en waarom consumenten op die manier worden beïnvloed en hoe de omgeving gebruikt kan worden als instrument van consumentenbeïnvloeding.

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