Cleanliness translated into sensory clues of the service environment

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ABSTRACT

Purpose The aim is to investigate what (tangible) characteristics of the environment people associate with cleanliness, to determine what aspects - apart from technical cleanliness - are involved when people perceive their (working) environment to be 'clean'.

Theory According to Berry et al. (2006), people (un)consciously filter experience clues in service environments, namely objective functional clues, and subjective mechanic (sensory) and humanic clues. Mechanic clues are important contributors to first impressions, and the value customers assign to the service organization. Values may act as subconscious clues and strongly influence people's objective rating of cleanliness.

Design/methodology/approach Two surveys were used to measure people's verbal associations with clean and dirty. To elicit (more) subconscious clues, a group of 21 people were asked to make moodboards representing 'clean' and 'dirty'. Verbal associations as well as moodboards were classified in functional/mechanic/humanic clues, based on frequency counts and open coding.

Findings Functional clues are primarily absence of dirt. Mechanic clues refer to idyllic nature (flowers, fresh smells) and signs that convey the message 'new, innocent, unblemished' (white, ordered, shiny). Dirt is associated with factors that threaten hygiene (dirty habits, animals, lack of maintenance), and link to the value 'security'. Humanic clues refer to competent cleaners (hard-working, friendly, clean).

Originality/value These exploratory results are the first step in the development of a tool that shows which mechanic clues in a building need to be improved to optimize customers' perception of cleanliness and thereby optimize customer satisfaction.

Keywords: Cleanliness, dirt, customer experience, clues, facility services

1 INTRODUCTION

The cleaning industry is able to meet high quality standards of technical cleanliness. However, customer satisfaction often does not reach the desired level. Apparently, perception of cleanliness of an environment is more than its objective cleanliness. Insight in the cleanliness perception can help both suppliers of cleaning services and their clients to raise customer satisfaction.

Together with Asito BV, a supplier of facility services in the Netherlands, an exploratory study on cleanliness perception was conducted. The aim was to investigate what (tangible) characteristics of the environment people associate with cleanliness, in order to find out what other aspects - apart from technical cleanliness - are involved when people perceive their (working) environment to be 'clean'.

Since the evaluation of the service environment based on the sensory perception of that environment is partly a subliminal process, it requires research methods that disclose associations with cleanliness that are stored in our subconscious memory. Therefore, this paper presents the results of an exploratory study into factors that invoke the perception of cleanliness, using research methods that are based on language as well as images.

2 THEORY

People intuitively agree that cleanliness is important in the perception and evaluation of an environment. The role of cleanliness in a service environment has received less attention than other environmental factors like music, odour and colour (Vilnay-Yavets & Gilboa, 2010), but cleanliness does appear to play a significant role in the perception of service quality (Wakefield & Blodgett, 1996). Furthermore, uncleanliness was found to be one of the most important irritating aspects in a shopping context (d'Astous, 2000). Vilnay-Yavets and Gilboa (2010) showed that cleanliness of a servicescape has a strong impact on customers' emotions, attitudes and approach behaviours. They found that customers derive greater pleasure from a clean and tidy servicescape than from a dirty or messy one. Customers also trust the service organization more, attribute greater prestige to the organization, and are more willing to come back when the servicescape is clean and tidy. So apparently cleanliness does play an important role in evaluation of service quality. But what aspects of service delivery induce people to rate the service environment as clean?

Research on the experience of services has shown that customers form an impression of a service based on several dimensions of their interaction with the service and the service provider, such as the physical surroundings and the service contact employees (Bitner, 1992; Wong, 2004). A number of studies focus mainly on the physical environment (Kim & Moon, 2009), whereas others combine elements of social interaction and physical environment (Bitner, 1992; Slåtten et al., 2010). Additionally, some studies discern a third element in participation, equipment, and (technical) facilities (Kim & Moon, 2009; Brunner–Sperdin & Peters, 2009). Likewise, Berry, Wall and Carbone (2006) distinguish three types of service clues. They state that "in interacting with organizations, customers consciously and unconsciously filter experience clues and organize them into a set of impressions, some more rational or calculative and others more emotional". An experience clue is "anything in the service experience the customer perceives by its presence or absence. If the customer can see, hear, taste, or smell it, it is a clue" (Berry et al., 2006). The typology of experience clues was originally introduced by Haeckel, Carbone and Berry (2003) and contains three main categories: functional, mechanic, and humanic clues. All experience clues together are mentally processed into the total service experience.

Functional clues refer to the technical quality of a service and concern its reliability; they are the 'what' of a service experience, like the key of a hotel room, the food in a restaurant, a computer in an office and, referring to cleanliness, the amount of dust on a table or rubbish in a wastebasket. *Mechanic clues* concern the sensory presentation of the service. They refer to actual objects or environmental characteristics and include sights, smells, sounds, tastes and textures. *Humanic clues* refer to the behaviour and appearance of service providers. Examples are the choice of words, tone of voice, body language, friendliness, and appropriate dress. Mechanic and humanic clues are the 'how' of the service experience. In the evaluation of services different clues play different roles and they can vary in importance. Berry et al. (2006) state that

functional clues mainly influence people's cognitive perceptions of the service and thus are important in meeting customers' expectations. On the other hand, mechanic and humanic clues primarily influence people's affective perceptions. Mechanic clues are important contributor of the first impression, expectations, and the value customers assign to the service organization. Humanic clues are most important in exceeding expectations, by creating a pleasant surprise.

It is also clarifying to make a distinction between objective and subjective clues in relation to cleanliness. Objective clues are tangible clues of the offered service that can be objectively determined, like amount of dust and stains or presence of absence of cleaning staff. Subjective clues rely on people's personal preferences. To explain the distinction between objective and subjective clues, Bakic-Miric (2008) used the metaphor of an iceberg: 'It can be seen as an iceberg with the tangible expressions of culture and behaviour above the surface of the water and the underlying attitudes, beliefs, values and meanings below the surface'. Subjective clues are not only less tangible than objective clues, people are also unaware of most of these subjective clues. They are stored in our subconscious memory. People are able to tell how they feel, express preferences or indicate what they would decide in a particular situation. However, people do not know why they feel the way they feel, cannot explain why they prefer something to something else or why they make a particular decision. People often *think* they know why they think or behave in a certain way, but their arguments are often nonsense (Dijksterhuis, 2007, p.18).

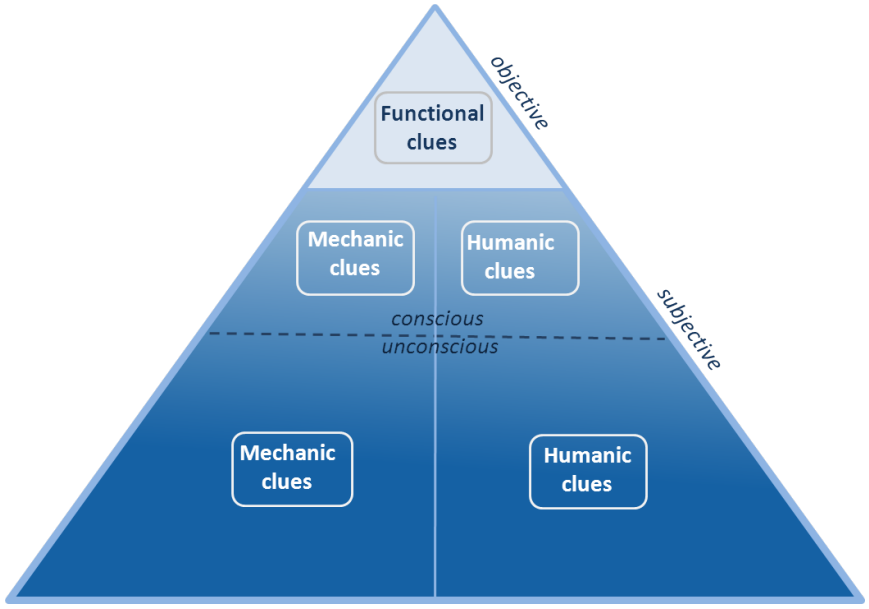

Figure 1. Cleanliness Perception Clues

The distinction between conscious and unconscious perception and information processing is important in selecting appropriate techniques to reveal the mechanic and humanic clues which people associate with cleanliness. In forming opinions, decision-making and behaviour our sub consciousness is more dominant and reliable than people intuitively assume (Dijksterhuis, 2007).

Cleaning activities and measurements of cleaning companies are mainly based on objective clues. However, customer satisfaction ratings are based on both objective and subjective clues. In order to raise customer satisfaction, insight in the subjective clues in the perception of cleanliness is needed. For the present study the typology of functional, mechanic and humanic clues was used to identify experience clues that communicate cleanliness. Figure 1 is a graphical

representation combining the three types of experience clues defined by Berry et al. (2006), together with a distinction between objective and subjective clues and conscious and unconscious perception of clues.

3 METHOD

In order to discover as much experience clues that people associate with cleanliness as possible, three different techniques were used.

3.1 Exploratory questionnaire

Firstly, an exploratory questionnaire was conducted to find out what type of associations people have with cleanliness. Five questions were posted on social network site, 'Thumb', that allows members to ask questions and receive answers real-time. As members answer questions real-time, they can enter and leave the stream of questions any time; therefore, each question has its own convenience sample. For each question 47 to 77 members of the network responded. Respondents were predominantly American citizens, aged between 20 and 40 years old.

3.2 Verbal associations

In order to get a deeper understanding of what people associate with 'clean' and 'dirty' the next step was an e-mailed questionnaire. Participants were instructed to think about characteristics of the physical environment and the appearance and behaviour of cleaning staff, and write down five associations with cleanliness and five with dirtiness. A convenience sample of 30 people responded. The participants were all Dutch, aged between 21 and 64 years old (average age 35).

3.3 Visual associations

The technique of gathering visual associations by creating moodboards, often used as a marketing tool for visualizing corporate identity of an organization and in the creative process of developing new products, was used to reveal associations stored in subconscious memory. The present study used moodboards to identify associations with cleanliness and dirt. The 21 participants were asked to select images out of a variety of magazines (lifestyle, interior, travel, nature, fashion and business magazines) and individually create two moodboards, one with images they associate with 'clean' and one for 'dirty'. Participants were employees of Saxion and employees of cleaning company Asito BV. All participants were Dutch. The age varied between 24 and 64 with a mean age of 37.

4 FINDINGS

The findings of the exploratory questionnaire, verbal and visual associations are subsequently presented and discussed.

4.1 Exploratory questionnaire

The results of the exploratory questionnaire show that people have particular associations with mechanical clues like newness and arrangement of furniture, colours and light.

Table 1. Verbal associations with 'clean'

Type of clue	Subcategory	Number of associations	Examples of associations
Functional		25	Clean (no dust, no stains, not dirty) Proper; Sterile (antibacterial soap, lack of pathogens, bleach, germ free, sanitized)
Mechanic	Smell	6	Smell, fresh smell, soap, lemon
	Colours	2	Blue, white
	Tidiness	1	No mess
	Surfaces	1	Shine and reflections
	Materials	10	Personal hygiene (soap, shampoo, baby wipes, water, bathroom, shower) Laundry, fresh sheets and linen; snow
Humanic	Behaviour of cleaners		
	Values		Faith; honesty, not corrupt

Only new furniture can be really clean according to 32% of the respondents (N=47). Those individuals will probably never get a clean impression of old furniture, even when it's objectively clean. 49% of respondents agree that a room looks cleaner when the chairs in a room are neatly arranged (N=82). Concerning colours, most respondents evaluated one of the two colour schemes as being cleaner, with 55% selecting the colours blue, green and yellow (N=88). Finally, 66% of the respondents associated bathroom with lots of light more with cleanliness compared to a bathroom with less light (N=75).

Table 1 contains the answers on the question 'What do you associate with clean?'. Both functional and mechanic clues were mentioned. Mechanic clues appeared to be related to smell, colour, tidiness or materials. No humanic clues related to cleaners' behaviour were reported.

The results of this exploratory questionnaire confirm that besides functional clues, which seem to come first into mind, also mechanic clues contribute to the perception of cleanliness. Furthermore, a few answers, like 'honesty', 'not corrupt' and 'faith' refer not to any of the clues, but to underlying values (Schwarz and Boehnke, 2004). So, further examination of subjective factors in the perception of cleanliness is worthwhile.

4.2 Verbal associations with 'clean' and 'dirty'.

The verbal associations of the respondents were coded as functional, mechanic or humanic clues (Table 2). Numbers indicate how often an aspect was mentioned.

As the instruction was to focus on the service environment and cleaning staff, Table 2 shows indeed less functional and mechanic clues related to personal hygiene compared to the results of the exploratory questionnaire. Furthermore, spontaneous associations with 'clean' and 'dirty' delivered far more mechanic than humanic clues. About 4% of the associations referred to appearance or behaviour of people.

Regarding the mechanic clues different subcategories can be discerned. Mechanic clue associations belong to one of the following categories: smell, sight (appearance, light, and

colour), tidiness, materials or maintenance, surfaces and signs of life. The last two categories were additive to those identified in the exploratory questionnaire. The verbal associations provided particularly mechanic clues concerning smell, tidiness and sight. For 'clean' as well as 'dirty' a large number of clues refer to smell. Examples of associations for 'clean' are: fresh smell and a smell of a cleaning agent. Associations with 'dirty' are nasty smells, sweaty cleaners and stuffy air. Tidiness appears also a large category of mechanic clues for both 'clean' and 'dirty'. People think of a neat office, empty wastebaskets, waste on the floor and bits of paper lying around. Colours and light, e.g. white, light and shiny, are mainly associated with 'clean'.

Table 2. Classification of verbal associations with 'clean' and with 'dirty'

Type of clue	**Subcategory**	**Clean**	**Examples 'clean'**	**Dirty**	**Examples 'dirty'**
Functional	Functional	51 35%	No dust or stains Clean desks, hands and clothing	61 40%	Dust, garbage, stains, dirty toilets, smudgy clothes of cleaners, sticky desk
Mechanic	Smell	26 18%	Fresh smell, smell of cleaning agents	22 14%	Nasty smells, sweaty cleaners, stuffy air
	Surfaces	3 2%	Smooth flooring		
	Sight (light & colour)	22 15%	Light, white, well-groomed, shiny	12 8%	Brown, non-colours, unkempt
	Signs of life	2 1%	Fresh flowers, forest	13 8%	Dogs, faeces, sweat, hairs, germs, fungus
	Tidiness	24 17%	Neat office, empty waste baskets	30 20%	Waste on floor, bits of paper lying around, waste basket filled to rim
	Materials & maintenance	7 4%	Glass, new furniture, water	6 4%	Obsolete furniture, broken tap, overdue maintenance, wooden items in bathroom, graffiti
Humanic	Humanic	6 4%	Friendly, hard-working cleaner; groomed	8 5%	Uninterested, shuffling cleaner, stained uniform, dirty hands; impolite
TOTAL		142 100%		152 100%	

4.3 Visual associations with 'clean' and 'dirty'

Characteristics of the moodboards created with the visual associations were analysed and like the verbal associations clustered in categories of functional, mechanic and humanic clues (Table 3).

Firstly, it is striking that the moodboards hardly show functional clues. Only cigarette ash and shower gel can be seen as both mechanical (smell) and functional clues (shower gel as cleaning agent).

Secondly, the visual associations can be assigned to the subcategories colour, smell, surfaces, tidiness, and signs of life, mechanic clue categories corresponding with categories that emerged from the verbal associations. However, 'signs of life' were more elaborately present in the moodboards, especially in relation to 'dirty'. In general, 'clean' was associated with flowers and

fresh green potted plants, while 'dirty' was associated with animals (cats, chicken and dead fish). The moodboards furthermore showed a more extensive impression of colour associations. Clean was associated with mainly cool hues (colours containing blue: blue, blue-green, blue-red), while dirty was associated with brown, grey and warm colour accents (colours with yellow, like yellow, orange, yellow-green, and peach). The HBS colour theory describes colours by three characteristics: hue, brightness and saturation. Based on HBS, clean was associated with light (bright) and saturated colours (with little grey), while dirty was more associated with darker (less bright) and less saturated colours, though together with some colourful, saturated accents. The visual associations show the additional mechanic subcategory food. Fruits and water were mainly associated with 'clean' whereas pet food, greasy food, pepper, fish, and garlic were associated with 'dirt'. Figure 2 shows some examples of clean and dirty moodboards.

Table 3. Visual associations with 'clean' and 'dirty'

Type of clue	**Subcategory**	**'Clean' moodboards**	**'Dirty' moodboards**
Mechanic	Colour	Dominant colours: white, light blue/green A bit of pink/red/purple	Contains either dark colours (brown/black) or neutral colours (beige/grey); some bright colours
	Smell	Perfume, flowers, fruit	Exhaust fumes, smoke, tobacco, paint, fireworks
	Surface	Smooth and shiny surfaces and textures (plates, tiles, glass, metal)	Mostly textured surfaces; ruffled, crinkled, creased, wicker, bark
	Tidy, structured	Tidy rooms, corridors; open space, straight lines, angular shapes, neat stacks	All kinds of lines, cluttered rooms, piles, messy
	Signs of life	Flowers, light green plants/leaves (no soil), ladybug	Animals (dead fish, (longhaired) cats, chicken, birds, fur), tree trunk, withered corn, disease (syringe, medicine)
	Food	Fruit, water	Pet food, greasy food, peppers, fish, garlic
Humanic	Appearance	Almost no men; parents with child(ren), but most times one woman. Clean. Little make-up, personal hygiene	More men, more pictures of multiple persons, physical contact; unkempt hair, feet, shoes, clean and smudged faces, Make-up.

Thirdly, in line with the exploratory questionnaire and the verbal associations, the moodboards show much more mechanic clues compared to humanic clues. However, the visual image technique may have been limited by the variety of images in the magazines, e.g. few images referring to cleaners' behaviour. Concerning the appearance of people, clean was associated with women with little make-up. Dirty was associated with (wo)men, people together, physical contact, unkempt hair, feet, and shoes.

Interestingly, the moodboards seemed to elicit other types of associations. More values were mentioned compared to the more concrete associations elicited by the word 'clean'. This suggests a additional category of clues, the underlying values stored in our subconscious memory (Bakic-Miric, 2008), which might help understand the relation between cleanliness and the mechanical sensory clues.

We checked whether the moodboards were recognised to represent 'clean' and 'dirty' twofold. Firstly, by putting them in random order and asking a convenience sample of 14 people to sort them. Three moodboards were shown to contain ambiguous images, these were excluded from the analysis shown in Table 3.

Figure 2. Examples of ‘clean’ (above) and 'dirty' (below) moodboards.

Secondly, since the participants were predominantly Western Europeans, a group of 36 international students (predominantly from Asia and Africa) were asked to evaluate ten ‘clean’ moodboards. They mentioned ssociations like bright, white, blue sky, shiny, water, flower, smell, perfume, freshness, beauty, cosy, comfortable, smiley face, neat and tidy, hygienic, nature, power, and no men, numbers or animals. These associations are quite in line with the results presented in this study, suggesting that the perception of cleanliness is to a large extent independent of cultural background.

5 CONCLUSION

The results of the present study show that indeed there are other aspects besides technical cleanliness that contribute to the impression of a service environment being clean. The typology of experience clues as defined by Berry et al. (2006) was used to categorise the associations with cleanliness and dirt. *Functional* (objective) as well as *mechanical* and *humanic* clues (subjective) were mentioned. Findings of the exploratory questionnaire showed that people are most easily

aware of objective, functional clues when they think of cleanliness. When prompted, they will mention more mechanic and humanic clues. White, light and neat seems to refer to unused, unblemished and ordered, and to a subconscious value like security (Schwartz and Boehnke, 2004). These subconscious associations become more apparent in the visual technique: animals, feet and shoes of people were associated with ‘dirty’, and typical colours, plants and flowers with ‘clean’.

Furthermore, the results of the three different techniques of investigating associations with cleanliness and dirt are in line with each other. However, they make contact with different subsets of associations in conscious and subconscious memory; the verbal and visual techniques overlap but also complement each other.

To summarize, what subjective experience clues are associated with cleanliness?

Cleanliness is:

- Mechanic: idyllic nature (flowers, fresh smells) and signs that convey the message 'new, unused, innocent, unblemished' (white, light, ordered, shiny), no evidence of factors threatening hygiene (dirty habits and people, animals, lack of maintenance).
- Humanic: competent cleaner (hard-working, friendly, clean)

6 MANAGERIAL IMPLICATIONS

These results show that by delivering technical cleanliness and at the same time optimizing the sensory perception of cleanliness (mechanical clues) and the appearance and behaviour of cleaning staff (humanic clues), cleaning companies and their clients can bring cleanliness of the working environment to a higher level and thereby add value for end-users.

'Fresh smell' is a powerful clue for 'clean'. Because cleaning products are hardly used anymore, due to use of microfiber cloths, cleaning companies are advised to think of alternatives ways of fragrance dispersion. Cleaning during daytime should be questioned. It will strengthen cognitive notions of (functional) clean, but if the cleaners themselves are not perceived as positive humanic clues, their visibility might prove counteractive.

The results also show that optimal customer satisfaction regarding cleanliness can only be achieved when both cleaning company and client optimize mechanic clues like lighting and maintenance. Therefore, developing a tool that shows negative (and positive) mechanic clues in a building would be interesting for cleaning companies, to define the maximum customer satisfaction they can reach within a particular service environment. It will allow them to explain to clients to what extent they can influence customers' satisfaction and to what extent their client will have to make changes in order to raise customer satisfaction.

7 LIMITATIONS AND FUTURE RESEARCH

Though association and visual techniques may show a number of subconscious aspects related to 'clean', not all sensory information is revealed. Availability of images, e.g. related to sounds, behaviour and ambient aspects like temperature, is a restriction. Furthermore, the number of respondents was limited. A follow-up will require a wider spectrum of images, sounds and smells, to be presented to a larger sample. Furthermore, it would be interesting to test to what

extent clues identified in this study are associated with cleanliness, as well as intercultural differences and the underlying values associated with cleanliness.

ACKNOWLEDGMENTS

We thank Melissa Veltien for her contribution to preparation, fieldwork and analysis of this study. We also thank Asito BV as partner in this research on cleanliness perception.

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