Effects of Interior Color on Health Care Consumers: a 360 Degree Photo Simulation Experiment

Joost W.M. Verhoeven, Twente University
Marcel E. Pieterse, Twente University
Ad T. H. Pruyn, Twente University

Effects of interior color on health care consumers: a 360 degree photo simulation experiment. Joost W.M. Verhoeven, University of Twente Marcel E. Pieterse, University of Twente Ad Th. H. Pruyn, University of Twente The effects of the ‘servicescape’ (Bitner, 1992) on consumer behavior have long been recognized. Especially in high-stress services, such as medical care in a general hospital, the physical environment can tremendously influence customer evaluation. This study investigates the effect of wall color on patients’ emotional and cognitive appraisal under varying levels of anxiety. A first aid examination room and a private ward room were simulated using QuickTime 360-degree virtual environments. Blue walls (as compared to white walls) reduce anxiety and increase cognitive and affective appraisal and even perceived service quality. Further findings will be discussed. Bitner, Mary Jo (1992), “Servicescapes: The impact of physical surroundings on customers and employees,” Journal of Marketing, 56, 57-71

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/12325/volumes/v33/NA-33

[copyright notice]:
This work is copyrighted by The Association for Consumer Research. For permission to copy or use this work in whole or in part, please contact the Copyright Clearance Center at http://www.copyright.com/.
definition of sacred but the facet of ‘ordinariness’ provoked rich and varied responses, difficult to reconcile with the definition of the profane.

References


Effects of Interior Color on Healthcare Consumers: A 360 degree Photo Simulation Experiment
Joost W.M. Verhoeven, University of Twente
Marcel E. Pieterse, University of Twente
Ad Th. H. Pruyn, University of Twente

The effects of the ‘servicescape’ (Bitner, 1992) on consumer behavior have long been recognized. Especially in high-stress services, such as medical care, the physical environment can strongly influence customer evaluation. This experiment investigates the effect of interior color on patients’ emotional and cognitive appraisal and perceived service quality. Subjects were exposed to QuickTime 360° panorama photos of a first aid examination room and a private ward room. Blue walls (as compared to white walls) reduce anxiety and increase cognitive and affective appraisal and even perceived service quality.

Introduction
Hospitalization can have a great psychological impact. A patient’s health is at stake, and (s)he is temporarily separated from family and friends. Under such conditions, patients display a strong need for information concerning their health and treatment (Engström, 1984). However, reliable information about the quality of healthcare is rather difficult or even impossible to obtain, as patients lack insight into the procedure and effects of the treatment. To reduce this uncertainty, patients will be inclined to infer their judgment of service quality from other indicators, such as the tangible environment. Therefore, physical aspects of the service environment play an important role in customers’ evaluation of healthcare services (Arneill & Devlin, 2002).

A considerable amount of empirical evidence is available about the effects of environmental factors on a wide variety of consumer responses (Turley & Milliman, 2000). Historically, the atmosphere in clinical environments has been cold and sterile due to color, lighting and furniture. The current trend in hospital interior design is to create an attractive, relaxing atmosphere in order to relieve patients’ stress and anxiety, improve their emotions and hence encourage the healing process (Devlin & Arneill, 2003). Color can be used effectively for this purpose (Calkins, 2002; Marberry & Zagon, 1994). Blue has been found to be the most preferred color throughout color literature (e.g. Bellizzi, Crowley & Hasty, 1983; Guilford & Smith, 1959), and stress-reducing effects of short wavelength colors (blue, green) are well-documented (e.g., Birren, 1979; Valdez & Mehrabian, 1994). Yet, solid empirical evidence for anxiety-reducing and affect-enhancing effects of interior color in healthcare settings is largely lacking.

In this study we investigated the effects of wall color on anxiety, pleasure, evaluation of the room and perceived service quality in a simulation of a general hospital. We expected subjects exposed to a hospital room with blue walls to experience more positive emotions, and 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.

Method
Procedure
A total of 90 students 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 being hospitalized with a leg fracture, after a fall from a ladder. The vignette 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 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. Wall color was manipulated using Adobe Photoshop. Subjects were randomly assigned to either the white (Hue 336°, Saturation 3%, Brightness 93%) or the blue condition (Hue 226°, Saturation 27%, Brightness 80%). They filled out a questionnaire measuring anxiety, pleasure, cognitive appraisal and perceived service quality. Subsequently, the vignette described the patient being transferred to a private ward room for a 10-day recovery. 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 cognitive appraisal, pleasure and anxiety-scales were administered.
Measures

Anxiety and emotion were measured using the 6-item translated ‘Profile of mood states’ anxiety subscale (Wald & Mellenbergh, 1990; α=.92) and the 6-item Mehrabian & Russel pleasure subscale (Mehrabian & Russell, 1974; α=.84), respectively. Cognitive appraisal was assessed using the 10-item environmental appraisal scale (Bitner, 1992; α=.81), and perceived service quality was measured, using a 13-item adjusted SERVQUAL-questionnaire (Parasuraman, Zeithaml & Berry, 1988; Parasuraman, Berry & Zeithaml, 1991; α=.87).

Results

Not surprisingly, respondents felt far more anxious receiving treatment in the examination room ($M_{\text{examination room}}=3.05$), than they did recovering in the ward room ($M_{\text{ward room}}=2.18$, $t=9.32$, $p<.001$).

Analyses of variance showed that in both rooms, blue walls significantly decreased anxiety compared to white walls (examination room: $F(1,88)=4.77$, $p<.04$, $\eta^2=.05$; ward room: $F(1,88)=5.77$, $p<.02$, $\eta^2=.06$), and also improved the subject’s pleasure (examination room: $F(1,88)=5.81$, $p<.02$, $\eta^2=.06$; ward room: $F(1,88)=5.36$, $p<.03$, $\eta^2=.06$) and cognitive appraisal (examination room: $F(1,88)=12.30$, $p<.002$, $\eta^2=.12$; ward room: $F(1,88)=8.54$, $p<.005$, $\eta^2=.09$). Even more interestingly, participants in the blue examination room condition perceived a higher service quality ($M_{\text{blue}}=3.53$), than participants in the white examination room ($M_{\text{white}}=3.24$; $F(1,88)=9.56$, $p<.004$, $\eta^2=.10$), even if the items referring to tangible aspects of the service, were omitted from the scale ($F(1,88)=7.33$, $p<.01$, $\eta^2=.08$).

A mediation analysis (Baron & Kenny, 1986) revealed that the relationship between color and perceived service quality ($\beta=.28$, $p<.004$) was partially mediated by both pleasure ($Z=1.83$, $p<.07$) and cognitive appraisal ($Z=2.56$, $p<.02$).

Discussion

The results provide consistent empirical evidence regarding the effects of interior color on patient responses. The hypothesis that blue walls in healthcare settings alleviate anxiety and improve emotion, the evaluation of the physical environment, and perceived service quality, was confirmed.

Mediation analyses confirm that affective as well as cognitive processes underlie the relationship between interior color and consumer evaluation. Color can enhance service evaluation by improving customers’ affective state and by increasing their evaluation of the physical environment. This may be the result of a halo effect (Thorndike, 1920): because the physical environment is positively evaluated, customers assume that other aspects of the service, such as the diagnosis and the treatment, are of the same, high quality.

When entering an emergency room, patients experience elevated levels of distress as a result of an acute health threat and the anticipation of a medical treatment. The aforementioned positive effects of blue walls are found in a high-anxiety, short-stay emergency room and in the relatively low-anxiety ward room, in which a patient is to spend considerable time recovering. First, this suggests that the beneficial effects of a blue wall color are not restricted to high-stress encounters, but may also occur under moderately stressful conditions. Secondly, the effect seems to be independent of exposure length.

Some care needs to be taken in interpreting these outcomes, since the data were collected among healthy subjects who were asked to imagine being hospitalized. These results should be replicated under realistic circumstances.

References


A Taxonomy of Spiritual Motivations for Consumption
Heather Skousgaard, University of Sydney

Consumer researchers have acknowledged that spirituality is an important factor in motivating consumption (eg. Baumgartner 2002; Curasi, Price and Arnould 2004; Gould and Stinerock 1992; Hirschman 1985; Holbrook 1999, 2001; Kozinets, 1997, 2001; Murray 2002; Thompson 2004; Twitchell 2004). Considered to be the ‘life force’ by which we act (Golberg 1998), the spirit is a major driver for human behaviour (Dyson, Cobb and Forman 1997; Golberg 1998; Stoll 1989), including consumption. Yet despite this, consumer researchers still lack a clear understanding of what spirituality is and how it affects consumer choices. This study set out to develop a taxonomy by which researchers may understand this previously ill-defined and misunderstood motivation for consumption and presents propositions through which it may be studied.

A review of consumer research reveals a paucity of studies that explicitly focus on spiritual motivations for consumption. This seems surprising given the host of studies that reflect facets of a search for spiritual fulfilment, including river rafting (Arnould and Price 1993), skydiving (Celsi, Rose and Leigh 1993), collecting (Belk 1995; Belk et al. 1988), sporting spectatorship (Holt 1995; Kozinets et al. 2004), ownership of automobiles (Belk 2004) or pets (Hirschman 1994), and engagement in consumption communities (Belk and Costa 1998; McAlexander, Schouten and Koenig 2002; Schouten and McAlexander 1995; Thompson and Troester 2002) or anticonsumption activities (Huneke, 2005; Kozinets 2002). Furthermore, the few studies that have directly examined spiritually-motivated consumption (SMC) have predominantly focussed on its religious expression (eg. O’Guinn and Belk 1989; Ozanne 1992; Wright and Larsen 1992), thus excluding the substantial portion of SMC that is not within a religious context (see Durgee 1999, for one exception).

Much needs yet to be learnt about spiritual motivations for consumption. Central to this is the acknowledgment that spirituality is a complex, multifaceted phenomena (Emmons and Paloutzian 2003) that cannot be characterised by a single behaviour or experience. Rather, spirituality represents a series of interrelated constructs that work together to form a cohesive yet intricate whole. Accordingly, this study offers a theoretical framework through which the many facets of spirituality may be understood and further examined.

Method
An extensive multi-disciplinary review of literature from psychology, religion, anthropology, personality, consumption and health care was undertaken. Content analysis revealed eleven potential descriptors of spirituality or spiritual experience which were synthesised into three main categories. The first two (meaning and connection) reflect the cognitive component of spirituality, while the third (emotional transcendence) reflects its affective component (Seidlitz et al. 2002). Testable propositions were then developed to enable future study.

Results
Meaning. Whether sought through literature, art, food, music, ideology, or relationships (Burkhart 2001; Dyson et al. 1997; Golberg 1998), meaning was identified as a primary focus of spirituality (Apikos 1992; Zimbauer et al. 1997), and thus a sense of meaning in life was seen to be central to spiritual wellbeing (Stoll 1989). Closely related to meaning were the concepts of purpose, hope and personhood (Dyson et al. 1997; Golberg 1998; Stoll 1989), each giving a sense of ‘what or who one ought to live for’ (Stoll 1989, 6).

Seen from a consumption standpoint, meaning may be proposed to shape an individual’s SMC choices as follows:

P1: Individuals who feel their lives lack meaning are more likely to choose SMC experiences that offer an explicit meaning narrative within a structured context such as a church (eg. O’Guinn and Belk 1989) or a social activist group (eg. Kozinets and Handelman 2004).

P2: Individuals who feel their lives already have inherent meaning are more likely to choose SMC experiences that enable them to create their own meaning narrative via self-driven behaviours (eg. the personal fashion discourse of Delores in Murray 2002).

Connection. Caring connections with both external ‘others’ (other people, nature or a Higher Power) and with one’s internal selves were frequently cited as key expressions and experiences of spirituality (eg. Burkhart 2001; Dyson et al. 1997; Hirschman 1985; Holbrook 1999; Moore 1996; Rose 2001; Thompson and Troester 2002; Walton 2002; Zimbauer et al. 1997). A sense of connection to the past, present or future (Badone 1991; Golberg 1998) or to a greater plan (Emmons and Paloutzian 2003) were considered important influences on spirituality. Hope, love, compassion, trust and forgiveness were identified as vital foundations for one’s relationships, thus influencing one’s sense of connection (Dyson et al. 1997; Golberg 1998; Rose 2001; Stoll 1989).

A desire for connection may be proposed to influence SMC choices in the following ways:

P3: Individuals seeking outer-directed spiritual connection are more likely to seek SMC experiences that are other-focussed or externally-driven such as antimarket festivals (eg. Kozinets 2002).

P4: Individuals seeking inner-centred spiritual connection are more likely to seek SMC experiences that are internally-focussed and self-generated such as sky diving (eg. Celsi et al. 1993).

Emotional Transcendence. The final key characteristic of spirituality concerned the ‘feeling level’ (Stoll 1989) of spiritual experience. Desirable affective states ranged from tranquil emotions such as peace, inner harmony, comfort, or a sense of security (Golberg 1998; Moore 1996; Stoll 1989), to more vibrant emotions such as joy (Zimbauer et al. 1997), ecstasy, exaltation or rapture (Holbrook 1999).

The nature of emotional transcendence that is desired may be proposed to influence SMC choices as follows:

P5: Individuals who seek tranquil spiritual experiences are more likely to engage in SMC activities that are of a quiet, gentle nature such as collecting (eg. Belk 1995; Belk et al. 1988) or meditative ritual (eg. Badone 1991).