WAITING ROOM PHYSICAL ENVIRONMENT AND OUTPATIENT EXPERIENCE: THE SPATIAL USER EXPERIENCE MODEL AS ANALYTICAL TOOL

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ABSTRACT

Waiting to receive medical attention is universally present in outpatient health services and, therefore, is a critical experience for service satisfaction. Researchers find that the waiting room physical environment influences users, and it may reduce the adverse effects of waiting. In this study, we used the spatial user experience model (SUE) framework in order to better understand the impact of waiting room features on patient experience. We developed and administered a questionnaire in waiting rooms at two Chilean medical centers. Responses from 563 outpatients and their companions were analyzed through structural equation modeling, concluding that the model is appropriate to describe the SUE in waiting rooms. The dimensions of emotional reaction, spatial appreciation, physical compatibility, and spatial cognition had the most substantial influence on user experience. Furthermore, the user experience showed a strong influence on behavioral intentions desirable by the healthcare industry. Our study provides useful insights to managers and creative teams about the diversity of factors that should be taken into consideration to implement waiting rooms that facilitate positive experiences for patients and visitors.

INTRODUCTION

Healthcare providers prioritize advanced facilities to offer quality care (Halawa et al., 2020) and have adopted a patient-centered orientation emphasizing customer experience, a fundamental value of service design (Lee, 2011). Thus, identifying and understanding the factors that affect patients is essential to promote positive experiences.

In particular, the healthcare industry acknowledges the relevance of the physical environment to improve service quality (Han et al., 2018). Fottler et al. (2000) highlighted the role of the physical environment as a relevant component of what customers expect from the healthcare experience, and Hutton and Richardson (1995) adapted the concept of atmospherics (Kotler, 1973) and the servicescape framework (Bitner, 1992) to propose the healthscape. Furthermore, there is a wide body of literature addressing the effects of specific environmental conditions on diverse patient outcomes (Ulrich et al., 2008).

Yet, Danaher and Gallan (2016) suggest that the impact of the physical environment on the patient experience still needs further research. Whereas investigators addressed the environmental effects of healthcare facilities on inpatients (Becker & Douglass, 2008; Figueroa, 2016; Laursen et al., 2014; Ulrich et al., 2008), outpatient services have gained relevance in the healthcare industry (Short et al., 2017), opening new research opportunities.

For the outpatient journey, the waiting room experience is critical to forming perception of quality of care and satisfaction (Becker et al., 2008). In this context, the physical environment could be used to counteract the negative effects of waiting. Leddy et al. (2003) found that patients who gave high scores to the waiting room's comfort had more tolerance for waiting. Pruyn and Smidts (1998) observed that the waiting room environment had a stronger impact on service satisfaction than the

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actual waiting time. They explained that, although it is not always possible to decrease waiting times, manipulating the environment is a feasible strategy to reduce the negative impact of waiting, influencing customers' affective responses and satisfaction. Consequently, studies contributing guidelines to improve the waiting room physical environment can be an important resource for service providers and creative teams.

Nevertheless, literature addressing the impact of the waiting room's physical environment on outpatients is limited. Most researchers focused on evaluating the effects of specific environmental features on patients' levels of stress or satisfaction (e.g., Fenko & Loock, 2014; Waldon & Thom, 2015) and on assessing patients' perception of diverse environmental features (e.g., Cusack et al., 2010; Fornara et al., 2006). Researchers have not measured overall user experience of the space, and there is scant evidence of studies attempting to holistically measure the impact of diverse waiting room features on patients. It is also an open question whether certain spatial features have a stronger impact on the patient experience than others.

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In response to the complexity of the experiential phenomenon in the built environment, Juliá Nehme et al. (2020) proposed the spatial user experience model (SUE). The concept *user experience* (UX) has been widely applied in design to improve the quality of products and systems from a human-centered standpoint.

The SUE model, defined from a design perspective, has multidisciplinary grounds. Based on contributions from business and marketing, environmental psychology, human factors/ergonomics, and design, the SUE model consists of a multidimensional structure comprising ergonomic/instrumental and affective dimensions triggered by diverse components of the physical setting. These dimensions are the main factors that influence the UX. Moreover, the UX affects behavioral responses (BR) (Juliá Nehme et al., 2020). Because most healthcare services are delivered in physical settings, the SUE can be understood as a component of the overall patient experience.

The purpose of the present study was to analyze the influence of the waiting room physical environment on outpatient experience in a sample of Chilean waiting rooms on the basis of the SUE model structure. Our specific goals were to (1) explore whether the SUE model is adequate to describe patients' waiting room UX, (2) identify which dimensions defined in the model have the largest influence on waiting room UX, and (3) evaluate whether the UX affects BR that are desirable for healthcare services. Our study contributes to closing the literature gap regarding the outpatient waiting room UX and provides useful insights in the design of waiting rooms that improve patient experience and well-being.

This article is structured as follows. First, we discuss the literature addressing the effects of the waiting room physical environment on patients. Second, we present the SUE model and the research hypotheses, followed by the methodology applied and results from each stage of the study. In the last section, we examine the study findings, implications for managers and designers, limitations, and projections.

LITERATURE REVIEW

Literature concerning the impact of the waiting room physical environment on patients and visitors is categorized into three topic areas: (1) effects of environmental factors, (2) patient' perceptions toward the waiting room environment, and (3) the relationship between patient' perceptions of the environment and quality of care.

Regarding environmental factors, researchers showed that slow and relaxing music, instrumental music, and natural sounds have a positive effect on visitors' reported stress level, anxiety, and relaxation (Fenko & Loock, 2014; Tansik & Routhieaux, 1999), as well as on patient satisfaction (Silverman et al., 2012; Waldon & Thom, 2015). Furthermore, Watts et al. (2016) identified a positive influence of natural sounds and images of natural landscapes on patients' reported tranquility. Pouyesh et al. (2018) discovered that introducing nature sounds, daylight, and changing the color of curtains and furniture from white to blue reduced patients' anxiety levels. Higuera-Trujillo et al. (2020)

determined that parents in a pediatric waiting room rated vegetation, environmental music, pictures for children, and scents as the most relevant factors to reduce stress. Regarding decorative components, Beukeboom et al. (2012) identified a positive effect of real plants and posters of plants on patients' stress level, along with the mediation effect of the perceived attractiveness of the waiting room. Cusack et al. (2010) found that patients preferred paintings of landscapes, nature scenes, and animals. Furthermore, Nanda et al. (2012) studied the effects of nature-related visual art on patients' behavior, finding behavioral outcomes such as reductions in restlessness, noise level, and number of inquiries made at the front desk.

In the second area, Cusack et al. (2010) explored which waiting area factors were relevant to the outpatient experience, finding that comfy chairs, entertainment features, and paintings were the most highly rated components. Deitrick et al. (2005) applied a quality-improvement survey to 124 visitors to evaluate their perceptions in an intensive care waiting room. They identified factors in need of improvement such as seat comfort, quietness, and reading material. They also found there were no significant gender differences in perception, while there were significant differences between some age groups regarding reading material. Following this line, Tsai et al. (2007) evaluated perceptions of 680 outpatients in medical center waiting rooms. They discovered that participants expressed higher levels of satisfaction with cleanliness and lighting, whereas the factors with lower evaluations were number of seats, seat comfort, and noise level. These authors also observed that age and gender influenced participants' satisfaction toward the environment, along with the hour of the visit (morning or afternoon), and number of times they had visited the service (first time or more).

Fornara et al. (2006) introduced the perceived hospital environment quality indicators (PHEQIs), finding that 202 patients, visitors, and staff evaluated humanized environments as better (settings that support the user's needs and well-being). Andrade et al. (2012) applied the PHEQIs to evaluate perceptions of 562 users in different hospital areas, including the waiting area. They observed that outpatients in the newer facilities evaluated the environment as significantly better than those in older hospitals. Moreover, Leather et al. (2003) compared perceptions of 81 patients toward a traditional waiting area versus perceptions of 64 patients in a nouveau waiting area. They found significantly higher scores for the nouveau design style. They also noted that patients' self-reported level of stress decreased over time in the nouveau waiting area, whereas the effect was the opposite in the traditional waiting room.

In the third area, Arneill and Devlin (2002) determined that pictures of comfortable and attractive waiting rooms generated a higher perceived quality of care, and Becker and Douglass (2008) identified that more attractive waiting rooms positively correlated with a higher degree of perceived quality, satisfaction, and staff interaction, as well as anxiety reduction. Furthermore, Lee (2011) established that ambient conditions (environmental conditions, visual attractiveness, and furniture) and "serviceability" (wayfinding, convenience, privacy, communication with staff, and cleanliness) had a significant influence on satisfaction with the facility and that serviceability was a significant predictor of perceived service quality and approach behaviors.

Outside these three topic areas, Catania et al. (2011) evaluated the emotional implications of waiting for cancer patients, stating that most patients expressed that time spent in the waiting room was distressing and had a high emotional cost. From a different perspective, Figueroa (2016) explored personal space in a Kuwaiti waiting room and identified that patients gathered in separate gender zones according to their local cultural norms. Finally, Fernández-Rivera et al. (2019) evaluated accessibility conditions in waiting rooms, concluding that accessibility should go beyond what is required by the standards to be optimal for all users.

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In summary, these investigators reveal that different environmental features influence people in a waiting situation. Furthermore, evidence supports that healthcare customers can express their judgment regarding a facility's design and environment. Nevertheless, these studies have not addressed the overall patient experience of interacting with the waiting room environment and how the diverse human processes that influence this experience are affected by waiting room design. To illustrate,

Watts et al. (2016), Pouyesh et al. (2018), Higuera-Trujillo et al. (2020), and Beukeboom et al. (2012) identified environmental factors such as sound, vegetation, and scents as stress reducers, yet other elements affecting the user experience such as physical comfort, proxemics, or spatial enjoyment were not examined. Deitrick et al. (2005), Tsai et al. (2007), and Fornara et al. (2006) explored patient perceptions of seating, spatial design, lighting, noise, etc., but did not consider emotional or behavioral aspects.

Thus, whether certain spatial features and human processes have a stronger impact on the patients' spatial experience in the waiting room than others is unknown. Our study uses the SUE multidimensional model to fill this gap.

SUE MODEL AND HYPOTHESES

Researchers applied the servicescape and healthscape frameworks (Bitner, 1992; Hutton & Richardson, 1995) as grounds to empirically study the effects of diverse environmental features on customers' and patients' perceptions of service quality, satisfaction, and behavior (Han et al., 2018; Lee, 2011; Sag et al., 2018). Both frameworks indicate that customers and employees respond emotionally, cognitively, and physiologically to the environment, influencing their behavior (approach or avoidance) and outcomes (e.g., satisfaction, quality value, willingness to return, and recommend).

The SUE model advances these proposals in two ways: First, by integrating the UX phenomenon and using it as a core dimension. Second, it establishes the independent appraisal processes triggered by specific aspects of the built environment, which influence the overall UX. This way, our model provides more detail to help researchers, service providers, and design practitioners to identify which elements in the setting affect user's perceptions and experience.

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The SUE model can be applied in diverse physical settings, defined as "functional systems in which environmental conditions, elements inside, and their distribution are designed to allow the performance of a specific activity" (Juliá Nehme et al., 2020, p. 13). Juliá Nehme et al. (2020) stated that, depending on the context, users can assume diverse roles, such as customer, student, or patient, and the SUE approach can contribute to business goals, aligning with service, marketing, and branding plans.

As shown in Figure 1, there are six dimensions influencing the UX categorized into two groups: (1) *ergonomic-instrumental*, representing the processes activated to respond to the users' objectives and motivations. This category comprises the dimensions of spatial cognition (SC), physical compatibility (PC), and environmental compatibility (EC); and (2) *affective*, referring to the processes that make people feel a particular way during the interaction. It includes the dimensions of emotional reaction (ER), spatial appreciation (SA), and proxemics (PR). Furthermore, the UX influences individuals' BR, understood as approach and avoidance behaviors (Juliá Nehme et al., 2020).

All dimensions in the SUE model can be studied through sets of items to assess each construct and their associations. Depending on the setting, some of the influential dimensions in the model could have a stronger impact on the UX (Juliá Nehme et al., 2020). On the basis of previous literature and observations of the waiting dynamic, we expect that all ergonomic-instrumental and affective dimensions will affect the UX in the waiting room. Figure 1 shows the hypothesized relationships defined in the study.

INFLUENCES OF ERGONOMIC-INSTRUMENTAL DIMENSIONS

SC refers to navigation within the physical setting to perform an activity. The setting's elements should be properly designed to orient users to the place and the process, allowing them to create a "map of interactions" or a successful sequence of actions to accomplish their goals (Juliá Nehme et al., 2020). An example of SC is "wayfinding." Ulrich et al. (2008) explained that wayfinding difficulties in hospitals mainly affect outpatients and visitors owing to new surroundings, stressful situations, and a feeling of disorientation.

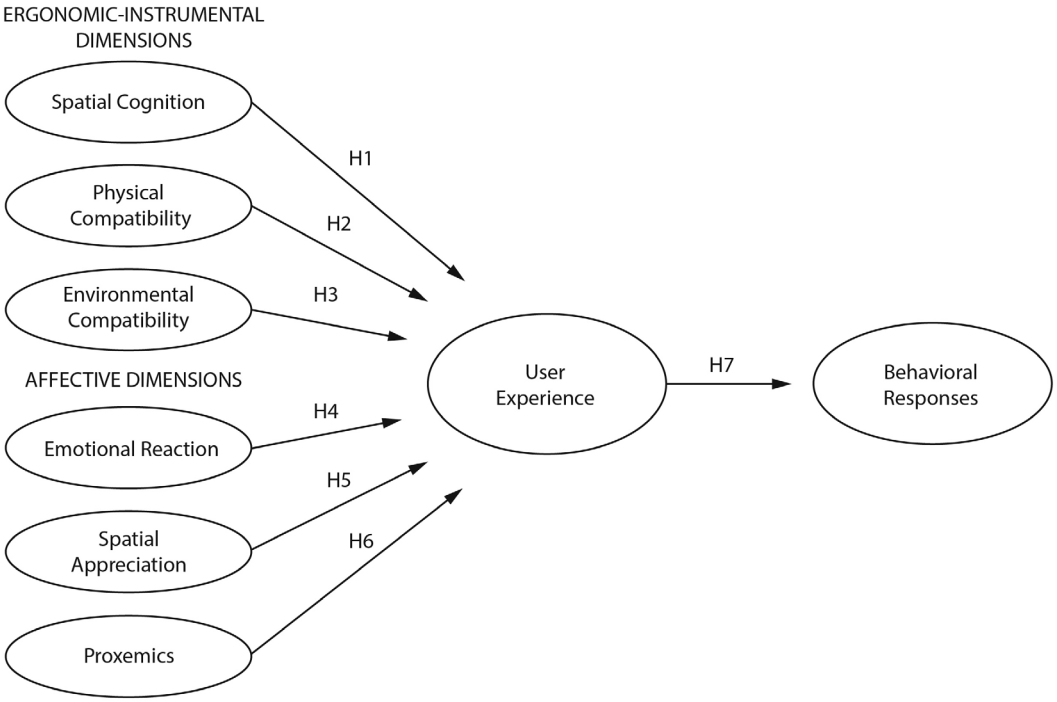

Figure 1 SUE research model and hypotheses.

Note. Adapted from "Spatial user experience: A multidisciplinary approach to assessing physical settings" by B. Juliá Nehme, E. Rodríguez, and S.Y. Yoon, 2020, Journal of Interior Design, 45(3), p. 14. (https://doi.org/10.1111/joid.12177). Copyright © 2020 by Interior Design Educators Council, Wiley Periodicals LLC.

In the waiting room setting, it is expected that patients easily identify the medical specialty unit, visualize the machine that dispenses an attention number, locate the reception desk and the seating area, and identify when and where they should go when called to receive medical attention.

H1. Positive SC will have a positive effect on the UX.

From the human factors/ergonomics perspective, design should focus on fitting the user, not the other way around (Woodson et al., 1992). Following this principle, the PC dimension refers to the fit between the setting's physical demands and user characteristics. Whereas furniture design is frequently the most relevant factor for PC, accessibility conditions to interact with all elements in the space should also be considered (Juliá Nehme et al., 2020).

Chairs or sofas are particularly relevant for PC in waiting rooms, where patients stay seated for indefinite periods. The seat dimensions should respond to the anthropometric characteristics of the users, and their materials should provide comfort. Accordingly, researchers included seat comfort in their perception scales assessing the waiting area and identified its relevance for patients (e.g., Cusack et al., 2010; Deitrick et al., 2005; Fornara et al., 2006; Tsai et al., 2007). Furthermore, Arneill and Devlin (2002) suggested that designers and health professionals should consider the accessibility of all waiting room elements.

H2. Positive PC will have a positive effect on the UX.

EC is defined as the match between the activity performed and the environmental features of the setting, such as illumination, sound, temperature, and air quality (Juliá Nehme

et al., 2020). Several studies show the positive effects of environmental factors in the waiting room (Fenko & Loock, 2014; Pouyesh et al., 2018; Waldon & Thom, 2015; Watts et al., 2016). Ideally, the waiting room should offer a comfortable environment for patients, allowing them to relax while waiting and engage in alternative activities such as reading.

H3. Positive EC will have a positive effect on the UX.

INFLUENCES OF AFFECTIVE DIMENSIONS

ER occurs in response to a setting's characteristics and to states of the other influential dimensions in the model (Juliá Nehme et al., 2020). Waiting is not a desirable experience. Consequently, researchers studying patients' emotional responses in the waiting room have mostly focused on stress and anxiety levels (Fenko & Loock, 2014; Higuera-Trujillo et al., 2020; Laursen et al., 2014; Tansik & Routhieaux, 1999), but other emotions should be explored. In general terms, it is expected that the waiting room physical environment triggers emotional responses in the users, influencing the UX.

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H4. Positive ER will have a positive effect on the UX.

SA refers to the process of esthetic appreciation of the setting and judgments of appeal (Juliá Nehme et al., 2020). Literature in healthcare suggests that pleasing surroundings positively affect patients' health and well-being (Caspari et al., 2006). Arneill and Devlin (2002) observed that patients naturally judge the appearance of the waiting room with words such as "ugly" or "warm and pleasant." Furthermore, researchers reveal the effects of attractive facilities on patients' perceptions, evaluations of quality of care, and behaviors (e.g., Arneill & Devlin, 2002; Becker & Douglass, 2008; Fornara et al., 2006; Leather et al., 2003; Nanda et al., 2012). Thus, we expect that the judgment of the waiting room interior design will influence the UX.

H5. Positive SA will have a positive effect on the UX.

PR is the dynamic element of interpersonal relations, whereby individuals are influenced by the distance and angle between them (Gifford, 2007). Culture and context are factors that affect the way people perceive their proxemic zones, classified into intimate, personal, social, and public distance (Hall, 1966). Crowding is an extreme situation influencing the individual's perception of personal space (Eroglu et al., 2005).

Although design decisions cannot wholly control PR, appropriate spatial layout, furniture arrangement, and seating design can help avoid negative feelings about personal space. For example, Figueroa (2016) suggested that chairs with armrests can improve the feeling of personal space because they mark a physical boundary for the user. In addition, researchers suggested that the waiting room should offer different seating arrangements responding to the patients' preferences, including zones to foster eye contact and communication and others to hinder it (Catania et al., 2011; Figueroa, 2016; Lee, 2011).

H6. Positive perception of PR will have a positive effect on the UX.

INFLUENCE OF USER EXPERIENCE ON BEHAVIORAL RESPONSES

In the SUE model, the UX will influence BR, which are expressed as demonstrations of approach or avoidance and are often evaluated as intentions, such as "willingness to wait" (Pruyn & Smidts, 1998). In healthcare, Hutton and Richardson (1995) and Fottler et al. (2000) defined

willingness to return and recommend to others as behavioral intentions (BI), and Lee (2011) added willingness to go to another facility.

H7. Positive UX will have a positive effect on the users' BR.

METHODOLOGY

In order to approach our objectives and test the hypotheses, we organized the study in two stages. The first stage was the development of a specially designed questionnaire to collect data required for analysis, given there were no multi-item scales available in the literature that could adequately represent each one of the constructs in the SUE model. The second stage was an analysis of the SUE model in the waiting room and the set of hypotheses through theoretically defined structural equation modeling (SEM). Data collection was performed at each stage with different samples ($n = 304$ for questionnaire analysis; $n = 563$ for SUE analysis). The study was approved by the ethics committee of Pontificia Universidad Católica de Chile.

Two Chilean health institutions agreed to participate and were designated Medical Center A (MCA) and Medical Center B (MCB). MCA is a government health service, and MCB is a private service, each catering to different populations. Their facilities differ in style, furnishing, and environmental conditions. We chose the two different centers to maximize variability in settings and participants. Variability in participants' responses provided a better opportunity to test the underlying structure of the SUE instrument. We selected five waiting rooms in which most patients were adults not in pain; two of the waiting rooms belonged to MCA and three to MCB. Four of these were multispecialty waiting rooms, and one was at the MCA laboratory. In each stage of the study (Stages 1 and 2), participants from the two institutions and each waiting room were combined into a single group for analysis, again to maximize variability.

SETTING

Waiting areas for MCA were simple and functional. Furniture included plastic chairs, wooden reception desks, a TV, and basic graphic information on the walls. Waiting areas in MCB followed a distinctive concept design: a modern building, spacious areas, armchairs and sofas in different colors, wooden reception desks, paintings, plants, TVs, and water dispensers. We registered the features of each waiting area as a reference, including illuminance (lux), level of sound (dbA), temperature (°C), spatial measurements (m), furniture measurements (cm), and photographs of the interior design.

STAGE 1: INSTRUMENT DEVELOPMENT

… we reviewed studies from the business, marketing, and healthcare fields that included scales related to the dimensions in the SUE model and were pertinent to the waiting room.

Questionnaire development comprised four steps: (1) selection of items/questions from the literature and creation of new items/questions, (2) cognitive interviews, (3) expert reviews, and (4) a pilot study. To begin, we reviewed studies from the business, marketing, and healthcare fields that included scales related to the dimensions in the SUE model and were pertinent to the waiting room. We selected, adjusted, and translated to Spanish the items found appropriate. Given that these items were insufficient to measure each construct, we created new items focusing on collecting valuable information regarding users' perceptions of waiting room interior design. For the ER dimension, we asked 15 participants to select the emotions they felt in previous visits to hospital waiting rooms from a list that included the scales proposed by Mehrabian and Russell (1974), Izard (1977), and Plutchik (1980), as well as some proposed by the research team. Among the most frequently selected emotions, we chose for the study those that could be influenced by waiting room interior design. Furthermore, we characterized the BR dimension as BI, selecting items that could capture the participants' beliefs about their willingness to stay, return in the future, and recommend the facility. To explore whether UX impacts all or only some of these intentions, we defined one factor composed by three items for each one.

The first version of the questionnaire included 67 items/questions representing the 8 dimensions in the model. The majority of these items were measured on a 5-point Likert scale, from *strongly disagree* to *strongly agree*. Other items presented variations of the 5-point scale's

labels (e.g., *very uncomfortable—very comfortable*). We also included 5-point-scale items that had the highest score in the center to gather more information from only one question (e.g., "The temperature is: *very cold, cold, pleasant, warm, too warm*"). Finally, the items corresponding to the ER dimension were structured as 5-point differential semantic items, with negative emotions at the extreme left and positive emotions at the extreme right.

As suggested by Jobe (2003), we developed cognitive interviews to test cognitive issues that could appear in a self-report questionnaire. Two women and one man from 58 to 70 years old with different educational backgrounds agreed to participate. The procedure consisted of one-on-one interviews to assess the understanding of the items for each participant. We identified ambiguous items and checked the interpretation of some interior design concepts that could be unfamiliar. We also measured the time required to respond to the questionnaire, determining that it was reasonable for the context of healthcare waiting rooms. Finally, we obtained the participants' approval regarding the font size and format of the questionnaire.

After improving the items according to the cognitive interviews, we asked experts to review the questionnaire to gather evidence regarding the extent to which the items adequately represented the constructs in the SUE model. Two psychometrics specialists reviewed the wording, clarity, language, and pertinence of the items. One interior designer and one researcher from the field of human factors/ergonomics assessed the quality of the items and their relevance to each dimension. In general, the experts considered the questions to be clear and the content appropriate. Some items were adjusted following their comments to improve the quality of the questionnaire.

The last stage for the questionnaire development was to perform a pilot study in outpatient waiting rooms to assess the constructs' measurement structure and reliability. The procedure to collect the data and the data analysis are presented in the next section.

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Data Collection and Sample (Stage 1)

We distributed questionnaires among the five waiting rooms over two weeks. The questionnaire applied in the first stage included 8 background questions, 67 measurement items/questions representing each of the 8 constructs in the SUE model, and 1 open space at the end for "other comments."

For the administration of the questionnaire, we organized the items in six different questionnaire forms to control for the possibility of missingness in the responses to the items in the last section due to participant exhaustion. This planned missingness strategy maximizes the likelihood of getting enough answers for all questions in order to make full use of the data (Graham et al., 2006). All forms started with a set of background questions, followed by the UX and the BI dimensions. The six dimensions in the SUE model that influence the UX were organized in different orders to secure a minimum number of responses for each of them.

A group of six undergraduate students collaborated with the principal investigator to distribute the questionnaire. All of them signed a confidentiality form before beginning and were trained in the data-collection protocol.

The procedure consisted of approaching adult patients and their companions when they arrived at the facility, either right after registration or when they were seated waiting for medical attention. We briefly explained the objective of the study and showed them the consent form. Patients and companions who agreed to participate responded while they were sitting and waiting. Some questionnaires were interrupted by the respondents being called to receive attention and were resumed after the medical procedure.

We collected 304 admissible responses. Demographics and background questions for the overall sample are presented in Table 1. Furthermore, the participants declared feeling between neutral and not nervous regarding the medical appointment ($M = 1.7$, $SD = 1.1$, where $0 =$ *not nervous*, $2 =$ *neutral*, and $4 =$ *very nervous*).

Table 1. Sample demographics and background Stages 1 and 2

	Stage 1		Stage 2	
Demographics and background	**Overall**	**Overall**	**MCA**	**MCB**
Sample size (*n*)	304	563	137	426
Age, *M* (*SD*)	50.9 (19.0)	47.8 (15.8)	54.6 (18.5)	45.6 (14.3)
Reduced mobility, *n* (%)	19 (6.3)	27 (4.8)	1 (0.7)	26 (6.1)
First time in the waiting room, *n* (%)	89 (29.3)	160 (28.4)	39 (28.5)	121 (28.4)
Gender, *n* (%)				
Male	121 (39.8)	226 (40.1)	49 (35.8)	177 (41.5)
Female	175 (57.6)	333 (59.1)	87 (63.5)	246 (57.7)
Other	3 (1.0)	1 (0.2)	0	1 (0.2)
Nationality, *n* (%)				
Chilean	286 (94.1)	533 (94.7)	129 (94.2)	404 (94.8)
Foreign	13 (4.3)	27 (4.8)	8 (5.8)	19 (4.5)
Education, *n* (%)				
Less than highschool	54 (17.8)	83 (14.7)	32 (23.4)	51 (12.0)
Highschool graduate	52 (17.1)	97 (17.2)	33 (24.1)	64 (15.0)
Technical incomplete	6 (2.0)	23 (4.1)	3 (2.2)	20 (4.7)
Technical graduate	59 (19.4)	105 (18.7)	22 (16.1)	83 (19.5)
College incomplete	27 (8.9)	55 (9.8)	21 (15.3)	34 (8.0)
College graduate	78 (25.7)	140 (24.9)	23 (16.8)	117 (27.5)
Graduate degree	25 (8.2)	58 (10.3)	3 (2.2)	55 (12.9)
Objective of the visit, *n* (%)				
Patient	236 (77.6)	391 (69.4)	91 (66.4)	300 (70.4)
Companion	61 (20.1)	156 (27.7)	42 (30.7)	114 (26.8)

Note. $n = 304$ for the questionnaire analysis (Stage 1); $n = 563$ for the Spatial User Experience analysis (Stage 2).

Data Analysis (Stage 1)

We conducted a pilot study with a first version of the questionnaire to examine the internal structure of the instrument, particularly the contribution of each item/question to the corresponding construct, to assess reliability. First, we applied generalized confirmatory factor analysis (CFA) to evaluate the measurement structure of each construct independently. We eliminated all items/questions that did not contribute substantially to their construct with factor loadings under .40 as suggested by Pituch and Stevens (2016). Additionally, the original BI structure comprised three subscales (intentions to stay longer, to return, and recommend), but the exploratory factor analysis suggested the presence of only one factor, so redundant items/questions with low loadings were dismissed. After this process, the total number of items/questions was reduced to 51 (see Appendix for the items/questions translated in English and in its original Spanish). Second, we performed a new multidimensional generalized CFA to assess the fit of the complete measurement model, including the eight constructs with the final selection of items/questions. As criteria for model fit, we followed the two-index combination suggested by Hu and Bentler (1999), which considers a cutoff value of 0.95 for the Tucker-Lewis index (TLI) and comparative fit index (CFI) in combination with a cutoff value of 0.09 for the standardized root mean residual (SRMR) index, and 0.06 for the root mean square error of approximation (RMSEA). This analysis was conducted using R software (R Core Team, 2019) and the Lavaan package (Rosseel, 2012). We applied the adjusted estimator weighted least square mean and variance (WLSMV) recommended by Brown (2006) because the data were not normally distributed, and the responses to the questionnaire were modeled as ordinal.

Table 2. Stage 1 confirmatory factor analysis (CFA) results of the measurement model (i.e., items/questions associated with each dimension)

CFA stage 1 ($n = 304$)			
Dimensions	**Standardized factor loadings**	**McDonald's omega 95% CI**	**Average variance extracted (AVE)**
Spatial Cognition sc1 sc2 sc3 sc4 sc5 sc6	.72/.80/.81/.78/.72/.96	.90 (.87–.92)	.65
Physical Compatibility pc1 pc2 pc3 pc4 pc5 pc6 pc7 pc8 pc9	.78/.63/.64/.74/.85/.88/.81/.76/.66	.90 (.87–.92)	.56
Environmental Compatibility ec1 ec2 ec3 ec4 ec5 ec6	.64/.89/.98/.65/.77/.70	.78 (.70–.84)	.58
Emotional Reaction er1 er2 er3 er4 er5 er6 er7 er8	.91/.76/.80/.80/.62/.77/.73/.94	.95 (.92–.97)	.63
Spatial Appreciation sa1 sa2 sa3 sa4 sa5 sa6 sa7 sa8	.80/.85/.91/.82/.87/.85/.82/.88	.95 (.93–.97)	.71
Proxemics p1 p2 p3 p4 p5	.74/.77/.97/.92/.65	.89 (.86–.92)	.65
User Experience e1 e2 e3 e4	.72/.84/.61/.94	.82 (.77–.86)	.61
Behavioral Intentions i1 i2 i3 i4 i5	.67/.83/.90/.90/.90	.87 (.84–.90)	.66

Note. See Appendix for the description of the dimension items/questions.

We evaluated the scale's reliability using McDonald's omega coefficient for categorical items, because it was better suited to the factorial modeling being used (Dunn et al., 2014). We considered a cutoff value of .70. We also estimated the average variance extracted (AVE) of each construct, with a cutoff value of .50 (Fornell & Larcker, 1981).

Results (Stage 1)

The CFA with the complete measurement model, including all constructs with the 51 items/questions selected altogether (see Appendix), showed a good fit with $\chi^2 = 2087.71$, $df = 1196$, $p < .001$, CFI = 0.95, TLI = 0.95, RMSEA = 0.06, SRMR = 0.07. The items/questions' factor loadings were significant in a range between .61 and .98. Furthermore, all scales showed acceptable reliabilities from .78 to .95, and the AVE of each construct was above the cutoff value of .50 (Table 2). These results show that the instrument is consistent with the theoretical model, indicating that it is reasonable to use for analyzing SUE in outpatient waiting rooms.

STAGE 2: SUE MODEL ANALYSIS

Data Collection and Sample (Stage 2)

We conducted another round of data collection during a six-week period to develop the second stage. We applied the final version of the questionnaire, which included 10 background questions, and the 51 measurement items/questions. We followed the same data collection procedure applied in Stage 1.

After dismissing 16 questionnaires that did not present the minimum number of answers required, we obtained an admissible sample of 563 participants. The sample demographics and basic background questions are presented in Table 1, including the results from the overall sample, MCA, and MCB.

Participants declared not feeling nervous about the medical attention ($M = 0.7$, $SD = 1.1$). They also declared feeling satisfied with the personnel ($M = 3.1$, $SD = 1.2$, where 0 = *not satisfied*,

Table 3. Stage 2 correlations between the eight dimensions in the Spatial User Experience model

	SC	PC	EC	ER	SA	PR	UX	BI
Spatial cognition (SC)	—							
Physical compatibility (PC)	.69	—						
Environmental compatibility (EC)	.52	.55	—					
Emotional reaction (ER)	.58	.58	.59	—				
Spatial appreciation (SA)	.67	.78	.66	.59	—			
Proxemics (PR)	.54	.77	.62	.55	.65	—		
User experience (UX)	.71	.80	.57	.70	.72	.68	—	
Behavioral intentions (BI)	.70	.74	.62	.75	.80	.62	.86	—

Note. All correlations are significant ($p < .001$).

Table 4. Stage 2 confirmatory factor analysis (CFA) results of the measurement model (i.e., items/questions associated with each dimension)

CFA Stage 2 ($n = 563$)			
Dimensions	**Standardized factor loadings**	**McDonald's omega 95% CI**	**Average variance extracted (AVE)**
Spatial Cognition sc1 sc2 sc3 sc4 sc5 sc6	.78/.86/.86/.84/.86/.88	.94 (.91–.96)	.70
Physical Compatibility pc1 pc2 pc3 pc4 pc5 pc6 pc7 pc8 pc9	.87/.71/.34/.74/.85/.87/.90/.80/.35	.87 (.85–.89)	.54
Environmental Compatibility ec1 ec2 ec3 ec4 ec5 ec6	.69/.76/.81/.83/.75/.71	.75 (.67–.83)	.55
Emotional Reaction er1 er2 er3 er4 er5 er6 er7 er8	.89/.80/.85/.58/.78/.77/.89 /.73	.93 (.91–.94)	.64
Spatial Appreciation sa1 sa2 sa3 sa4 sa5 sa6 sa7 sa8	.73/.90/.87/.79/.77/.83/.88/.90	.95 (.93–.95)	.71
Proxemics p1 p2 p3 p4 p5	.48/.63/.91/.91/.61	.83 (.79–.86)	.55
User Experience e1 e2 e3 e4	.80/.90/.72/.93	.86 (.83–.88)	.70
Behavioral Intentions i1 i2 i3 i4 i5	.76/.80/.87/.87/.92	.89 (.86–.90)	.70

Note. See Appendix for the description of the dimension items/questions.

2 = *neutral*, and 4 = *very satisfied*), and they mostly agreed that the waiting room features fulfilled their expectations ($M = 3.0$, $SD = 1.2$, where 0 = *strongly disagree*, 2 = *neutral*, and 4 = *strongly agree*).

Data Analysis (Stage 2)

To study the SUE model in the waiting room, we analyzed the data following the two-step approach proposed by Anderson and Gerbing (1988). As a first step, we checked the stability of the factorial structure identified in the pilot study during stage 1 by repeating the generalized CFA, testing again the complete measurement model's fit including the 8 constructs and 51 observed variables. Furthermore, we assessed the reliabilities of the measurement scales with the omega coefficient along with the AVE.

For the second step, we applied SEM analysis to evaluate the hypothesized relationships between the latent dimensions in the SUE model and to identify which influential factors have

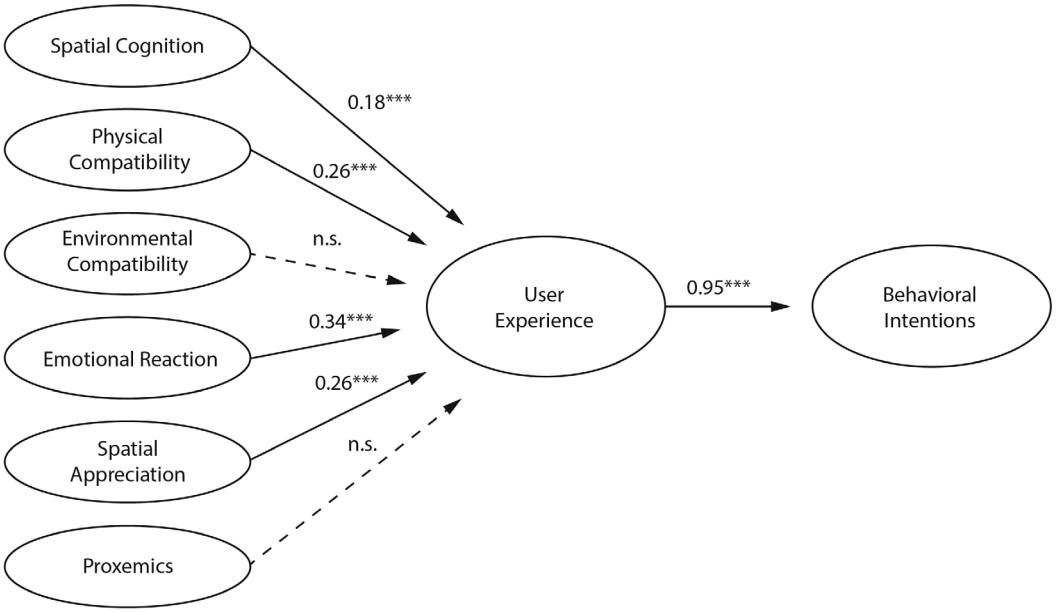

Figure 2 Spatial user experience structural model. Standardized coefficients are shown.

Note. Coefficients presented are standardized; (n.s.) Nonsignificant relationships.
***p<.001

the strongest influence on the UX in the waiting room. We conducted this analysis using Mplus 8 software (Muthén & Muthén, 1998–2017), defining the items as categorical and applying the WLSMV estimator.

Results (Stage 2)

Results of the CFA with the complete measurement model were consistent with the pilot study, showing an acceptable fit with $\chi^2 = 3110.47$, $df = 1196$, $p < .001$, CFI = 0.95, TLI = 0.94, RMSEA = 0.06, and SRMR = 0.06. The correlations between the eight model dimensions were all significant, from .52 to .86 (Table 3). All factor loadings were significant. We found two items/questions in the PC dimension with loadings under .40 (pc3 and pc9); and the rest of the factor loadings were between .48 and .93. The reliability evaluation for each construct was consistent with the results from the pilot study during stage 1, with omega coefficients between .75 and .95 and AVE above .50 (Table 4).

Statistics for the SEM analysis suggested an acceptable fit with $\chi^2 = 3500.91$, $df = 1202$, $p < .001$, CFI = 0.95, TLI = 0.94, RMSEA = 0.06, and SRMR = 0.06. Furthermore, hypotheses H1, H2, H4, H5, and H7 were accepted. As presented in Figure 2, regression coefficients with the fully standardized solution showed a significant and positive influence of four of the six influential dimensions in the following order: ER (b = 0.34, $p < .001$), SA (b = 0.26, $p < .001$), PC (b = 0.26, $p < .001$), and SC (b = 0.18, $p < .001$). The relationships between the EC and PR dimensions and the UX were in the expected direction, but were not significant. Finally, our analysis showed that the UX had a positive and strong influence on visitors' BI (b = 0.95, $p < .001$).

DISCUSSION AND CONCLUSIONS

Regarding the instrument created for the study, the CFA and reliability assessment showed that the items/questions correctly represented each construct. The SEM analysis illustrated that the SUE model is appropriate to describe the outpatients' experience of interacting with the waiting room. This means that the UX—as SUE's core dimension—is a holistic phenomenon influenced by diverse human appraisal processes and impacts users' BI in the waiting room. Positive evaluations of the waiting room interior design should lead to a positive UX and desirable BR.

These results suggest that waiting room design should focus on supporting users cognitively (wayfinding and orientation in the process), physically (comfort, physical fit between user and furniture, accessibility conditions), and affectively (attractive design, maintenance, positive emotions) to improve the experience of the waiting room visitors.

Furthermore, SEM analysis demonstrated that some influential factors have a stronger impact on the UX than others, thus allowing the ranking of the relevance of each dimension as follows: ER, SA, and PC, and finally, SC. EC and PR did not have a significant impact on UX. These results suggest that waiting room design should focus on supporting users cognitively (wayfinding and orientation in the process), physically (comfort, physical fit between user and furniture, accessibility conditions), and affectively (attractive design, maintenance, positive emotions) to improve the experience of the waiting room visitors. These results correspond with previous findings in terms of the relevance of wayfinding for services and the waiting room (Bonfanti et al., 2017; Lee, 2011; Short et al., 2017; Ulrich et al., 2008), physical comfort in the waiting room (Arneill & Devlin, 2002; Catania et al., 2011; Cusack et al., 2010; Lee, 2011); the impact of waiting room attractiveness (Arneill & Devlin, 2002; Beukeboom et al., 2012; Leather et al., 2003; Lee, 2011); and emotional response toward the environment (Beukeboom et al., 2012; Laursen et al., 2014).

On the other hand, the nonsignificance of the EC dimension is understandable given that the waiting room visitors were not doing demanding tasks while waiting, and they reported not feeling nervous about the medical consult. Thus, they could be more tolerant of environmental conditions that are not extreme (lighting, noise, temperature, scents). Moreover, we did not observe critical situations of personal space during the visits. The nonsignificance of the PR dimension could be explained by lack of crowding, availability of seats for all patients, plus the option to choose where to sit. We recommend treating these results with caution, considering that the waiting rooms selected do not represent all healthcare service realities. For instance, it is possible that in crowded medical centers, the PR dimension would have a substantial effect on visitor experience during the wait.

Finally, the SEM analysis showed a strong impact of the UX on BI. This relationship is essential to make visible the relevance of interior design and the UX to BIs that are valuable for healthcare services, such as willingness to return and recommend the service. Thus, our results suggest that investing in waiting room design that is focused on facilitating a positive patient experience will bring returns through customer loyalty and conveying a good institutional image. Nevertheless, given the strong relationship between UX and BI, we suggest revising the items/questions selected for the BI dimension because some of them could also represent the UX dimension (e.g., item i1, "In spite of the purpose of my visit, I enjoy spending time in this place," see Appendix) thus influencing the measurement of the relationship.

MANAGERIAL AND DESIGNER IMPLICATIONS

Evaluating how patients assess their experience can facilitate changes to improve service quality (Urden, 2002). In this sense, our study provides insights for managers and creative teams to better understand how features of the waiting room design affect patients' and visitors' UX, as well as the relevance to future behaviors regarding the service.

Our results demonstrate that functional and affective factors are relevant for the SUE. Thus, health managers, interior designers, and architects should consider both aspects to improve waiting room design and facilitate patients' positive appraisals. For instance, signage should be clear, readable, effective, and esthetically attractive. Seats should be comfortable for diverse users, and at the same time, be attractive and kept in good condition.

The hierarchy found among the factors that influence the waiting room UX can help managers and practitioners prioritize interventions, especially in projects with limited budgets. Our study suggests that, to facilitate a positive patient experience, waiting room design should prioritize that patients can be seated comfortably while waiting in a pleasant, attractive, clean, and well-maintained space. In addition,

interior design should guarantee that patients locate the medical unit easily, identify the sequence of actions to get the medical attention, and be aware of when they will be called for their appointments.

From a local perspective, the Chilean health system is composed of private and public institutions. Whereas the private sector has integrated high-quality interior design to enhance patients' experience, public health institutions have limited resources to invest in this feature. The results of our study could help improve waiting room design in private and public institutions, facilitating a better experience during the wait. Furthermore, most of the possible interventions do not involve architectural changes, and thus, can be solved with small budgets.

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Finally, considering that the SUE model has a multidisciplinary background, we propose it can be used as a framework to facilitate dialog between health managers and interior designers. Having this common ground, professional teams could focus on responding to user needs and desires.

LIMITATIONS AND PROJECTIONS

In this study, personal characteristics involved in the UX were not controlled (e.g., culture, personality, previous experiences, gender, age, mobility, or education level). Furthermore, it could be difficult for some participants to judge their experience of waiting room use, leaving aside their experience with the personnel or other service aspects. Researchers could integrate these variables in future studies and explore their impact on the SUE.

Given that MCA's sample size was small, we could not perform an invariance analysis to evaluate whether the SUE model applied equally in both medical centers. Subsequent studies with larger samples could test for invariance in parameters of the factor structure and how differences in settings could affect the user responses. For instance, there is an opportunity to explore differences between the patients' perceptions of government and private facilities and how they affect the SUE.

Furthermore, considering that the interior design of MCA and MCB differed and the questionnaire included items regarding diverse spatial design features, there is an opportunity to compare patients' responses and provide more detailed guidelines for waiting room design. The questionnaire could also be administered by health managers to evaluate how patients perceive waiting room design in their facilities. On the other hand, future studies could explore the impact of specific interventions in outpatient waiting rooms associated with the influential dimensions in the SUE model. Examples are the introduction of plants and natural sounds, diverse seating options to accommodate people with different needs, or transforming the waiting room into an ''active space'' where visitors can learn, work, play, or relax.

It is relevant to note that the translated English version of the questionnaire has not been submitted to cognitive review to verify its clarity in this language. We recommend researchers develop cognitive interviews with English spoken participants to apply the questionnaire in English.

Finally, we encourage researchers to apply the SUE model to study diverse service physical settings and to use our questionnaire as a starting point to collect data. Nevertheless, given the specificity of every space, it is important to consider that the questionnaire should be carefully reviewed and adapted, which may require a new analysis to confirm the instrument's psychometric properties. Results from such studies could be valuable to service managers who want to integrate design guidelines into their strategic plans and implement physical settings from a human-centered standpoint.

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APPENDIX

QUESTIONNAIRE MEASUREMENT ITEMS/QUESTIONS

The questionnaire's measurement items/questions translated into English and its original version in Spanish are below.

Table A1. User experience items/questions

Label	Item/Question	Scale
e1	Considering the characteristics of my waiting room, my experience waiting my turn for attention has been (*Considerando las características de la sala de espera, mi experiencia esperando mi turno de atención ha sido*)	5-point scale Very satisfactory—Very unsatisfactory (*Muy insatisfactoria—Muy satisfactoria*)
e2	Characteristics of this space have allowed for a wait that is (*Las características del espacio han permitido una espera*)	5-point scale Very uncomfortable—Very comfortable (*Muy incómoda—Muy cómoda*)
e3	My experience accessing medical attention has been (*Mi experiencia para acceder a la atención médica ha sido*)	5-point scale Very difficult—Very simple (*Muy complicada—Muy simple*)
e4	Generally, I can say that the experience of awaiting medical attention in this space has been (*En términos generales, puedo decir que la experiencia de esperar por la atención médica en este espacio ha sido*)	5-point scale Very negative—Very positive (*Muy negativa—Muy positiva*)

Note. The original items/questions and scales in Spanish are in parentheses.

Table A2. Behavioral intentions items/questions

Label	Item/Question	Based on	Scale
i1	In spite of the purpose of my visit, I enjoy spending time in this place (*Pese al objetivo de mi visita, disfruto pasar tiempo en este lugar*)	Wakefield and Blodgett (1996)	5pA
i2	If I needed medical attention again and could choose, I would return to this same place (*Si necesitara nuevamente atención médica y pudiera elegir, volvería a este mismo lugar*)	Jang and Namkung (2009); Lee (2011)	5pA
i3	I wish all health service waiting rooms were like this one (*Me gustaría que todas las salas de espera en servicios de salud fueran como esta*)		5pA
i4	I will probably make favorable comments about this waiting room (*Es probable que comente cosas buenas sobre esta sala de espera*)	Jang and Namkung (2009); Zeithaml et al. (1996)	5pA
i5	Given the characteristics of the waiting room, I would recommend this place to family and friends (*Dadas las características de la sala de espera, recomendaría este lugar a familiares y amigos*)	Hutton and Richardson (1995); Jang and Namkung (2009); Lee (2011); Zeithaml et al. (1996)	5pA

Note. The original items/questions and scales in Spanish are in parentheses. 5pA = 5-point scale "Strongly disagree—Strongly agree"/(*Muy en desacuerdo—Muy de acuerdo*).

Table A3. Ergonomic-instrumental dimensions and items/questions

Label	Item/Question	Based on	Scale
Spatial cognition			
sc1	I can easily identify where I have to take a number for my appointment (*Identifico fácilmente donde tengo que sacar mi número de atención*)		5pA
sc2	Signage is useful, clearly visible and gives me appropriate orientation (*La señalética es útil, es claramente visible y me entrega orientación apropiada*)	Bitner (1990); Fornara et al. (2006); Lee (2011)	5pA
sc3	I am clear on where to go once my turn for attention comes (*Tengo claro donde tengo que ir una vez que llegue mi turno de atención*)		5pA
sc4	I can easily see/hear how appointment turns progress (*Puedo ver/oír el avance de los turnos de atención fácilmente*)		5pA
sc5	I can easily tell when my appointment turn comes (*Puedo enterarme fácilmente de que llegó mi turno de atención*)		5pA
sc6	Overall, it appears easy to me to know what I have to do to get medical attention (*En términos generales, me parece fácil saber lo que tengo que hacer para recibir la atención médica*)		5pA
Physical compatibility			
pc1	The halls are wide enough for me to circulate without problems (*El ancho de los pasillos me permite circular sin dificultad*)	Bitner (1990); Kim and Moon (2009)	5pA
pc2	The height of the main desk lets me see and communicate with personnel, exchange documents and pay without problems		5pA

(Continues)

Table A3. Continued

Label	Item/Question	Based on	Scale
	(*La altura del mesón de atención me permite ver y comunicarme sin difultades con el personal, intercambiar documentos y pagar*)		
pc3	I feel physical discomfort from the time I've had to wait (*Siento molestias en mi cuerpo por el tiempo que llevo esperando*)		5pR
pc4	There are enough seats for the people waiting (*La cantidad de asientos es suficiente para las personas esperando*)	Fornara et al. (2006)	5pA
pc5	The seat back gives me good support (*El asiento posee un respaldo que me brinda un buen apoyo*)		5pA
pc6	My legs have enough free space (*Tengo suficiente espacio libre para mis piernas*)	Wakefield and Blodgett (1996)	5pA
pc7	The seat width gives me enough personal space (*El ancho del asiento me otorga suficiente espacio personal*)	Liu and Jang (2009); Wakefield and Blodgett (1996)	5pA
pc8	I think the seat firmness is (*La consistencia del asiento me parece*)		5pB
pc9	I think the seat material is (*El material del asiento me parece*)		5pC
Environmental compatibility			
ec1	I think the temperature is (*La temperatura me parece*)	Fornara et al. (2006)	5pD
ec2	I think the ventilation is (*La ventilación me parece*)	Fornara et al. (2006)	5pE
ec3	The air feels (*El aire se siente*)	Fornara et al. (2006)	5 pF
ec4	I think the lighting level is (*El nivel de iluminación me parece*)	Fornara et al. (2006)	5pG
ec5	I think the ambient sound is pleasant (*El sonido ambiental me parece agradable*)	Gann et al. (2003); Zemke and Pullman (2008)	5pA
ec6	I find the ambient aroma pleasant (*El aroma que percibo en el ambiente me parece agradable*)	Kim and Moon (2009); Wakefield and Blodgett (1996)	5pA

Note. The original items/questions and scales in Spanish are in parentheses.5pA = 5-point scale "Strongly disagree—Strongly agree"/(*Muy en desacuerdo—Muy de acuerdo*); 5pR = 5-point scale with reversed scores "Strongly disagree- Strongly agree"/(*Muy en desacuerdo—Muy de acuerdo*); 5pB = 5-point scale "Too hard—Hard—Neutral—Comfortable—Very comfortable"/(*Muy dura—Dura—Neutral—Confortable—Muy confortable*); 5pC = 5-point scale with highest score in the center "Too cold—Cold—Agreeable—Warm—Too warm"/(*Muy frío—Frío—Agradable—Caluroso—Muy caluroso*); 5pD = 5-point scale with highest score in the center "Too cold—Cold—Pleasant—Hot—Too hot"/(*Muy fría—Fría—Agradable—Calurosa—Muy calurosa*); 5pE = 5-point scale with highest score in the center "Too weak, Stale air – Weak – Adequate – More than desirable – Excessive, there is a draft"/(*Muy escasa, aire pesado—Escasa—Adecuada—Más que lo deseable—Excesiva, hay corrientes*); 5 pF = 5-point scale with highest score in the center "Too dry—Dry—Pleasant—Humid—Too humid"/(*Muy seco—Seco—Agradable—Húmedo—Muy húmedo*); 5pG = 5-point scale with highest score in the center "Too dim—Dim—Pleasant—Intense—Too intense"/(*Muy tenue—Tenue—Agradable—Intensa—Muy intensa*).

Table A4. Affective dimensions and items/questions

Label	Item/Question	Based on	Scale
Emotional reaction			
er1	Annoyed—Pleased (*Molesto—Contento*)	Mehrabian and Russell (1974); Soriano and Foxall (2002)	5pDS
er2	Bored—Entertained (*Aburrido—Entretenido*)	Bigné et al. (2005)	5pDS
er3	Jittery—Calm (*Inquieto—Calmado*)	Mehrabian and Russell (1974); Soriano and Foxall (2002)	5pDS
er4	Sleepy—Wide awake (*Somnoliento—Despierto*)	Mehrabian and Russell (1974); Soriano and Foxall (2002)	5pDS

(Continues)

Table A4. Continued

Label	Item/Question	Based on	Scale
er5	Anxious—Calm (*Ansioso—Tranquilo*)	Jeon and Kim (2012)	5pDS
er6	Suspicious—Trusting (*Desconfiado—Confiado*)	Jeon and Kim (2012)	5pDS
er7	Displeased—Pleased (*Disgusto—Placer*)	Mehrabian and Russell (1974)	5pDS
er8	Despairing—Hopeful (*Desesperanzado—Esperanzado*)	Mehrabian and Russell (1974); Soriano and Foxall (2002)	5pDS
Spatial appreciation			
sa1	The waiting room looks clean (*La sala de espera me parece limpia*)	Andrade et al. (2012)	5pA
sa2	The waiting room looks welcoming (*La sala de espera me parece acogedora*)	Ritterfeld and Cupchik (1996)	5pA
sa3	The space seems ample (*El espacio me parece amplio*)	Karatepe et al. (2005)	5pA
sa4	I like this waiting room's colors (*Me gustan lo colores de esta sala de espera*)	Baker et al. (1994); Kumar and Kim (2014)	5pA
sa5	The furniture is in good condition (*Los muebles se encuentran en buenas condiciones*)	Andrade et al. (2012)	5pA
sa6	I like the furniture's design (*Me gusta el diseño de los muebles*)	Terblanche (2018)	5pA
sa7	I like this waiting room's décor (*Me gusta como está decorada esta sala de espera*)	Kumar and Kim (2014); Terblanche (2018); Wakefield and Blodgett (1996)	5pA
sa8	Overall, I like this waiting room's design (*En términos generales, me gusta el diseño de esta sala de espera*)	Baker et al. (1994); Wakefield and Blodgett (1996)	5pA
Proxemics			
p1	I think there's too many people waiting in this room (*Considero que en esta sala hay demasiadas personas esperando*)	Baker et al. (1994)	5pR
p2	I feel like others are too close to me (*Percibo que las demás personas están demasiado cerca de mí*)	Jeon and Kim (2012)	5pR
p3	Everyone has enough personal space (*Cada persona tiene suficiente espacio personal*)	Andrade et al. (2012)	5pA
p4	The seat arrangement lets me feel I have my own space (*La organización de los asientos me ayuda a sentir que tengo mi propio espacio*)	Ryu (2005)	5pA
p5	I can easily avoid eye contact with strangers (*Puedo evitar el contacto visual con personas desconocidas fácilmente*)		5pA

Note. The original items/questions and scales in Spanish are in parentheses.5pA = 5-point scale "Strongly disagree—Strongly agree"/(*Muy en desacuerdo—Muy de acuerdo*); 5pR = 5-point scale with reversed scores "Strongly disagree- Strongly agree"/(*Muy en desacuerdo—Muy de acuerdo*); 5pB = 5-point scale "Too hard—Hard—Neutral—Comfortable—Very comfortable"/(*Muy dura—Dura—Neutral—Confortable—Muy confortable*); 5pC = 5-point scale with highest score in the center "Too cold—Cold—Agreeable—Warm—Too warm"/(*Muy frío—Frío—Agradable—Caluroso—Muy caluroso*); 5pD = 5-point scale with highest score in the center "Too cold—Cold—Pleasant—Hot—Too hot"/(*Muy fría—Fría—Agradable—Calurosa—Muy calurosa*); 5pE = 5-point scale with highest score in the center "Too weak, Stale air – Weak – Adequate – More than desirable – Excessive, there is a draft"/(*Muy escasa, aire pesado—Escasa—Adecuada—Más que lo deseable—Excesiva, hay corrientes*); 5 pF = 5-point scale with highest score in the center "Too dry—Dry—Pleasant—Humid—Too humid"/(*Muy seco—Seco—Agradable—Húmedo—Muy húmedo*); 5pG = 5-point scale with highest score in the center "Too dim—Dim—Pleasant—Intense—Too intense"/(*Muy tenue—Tenue—Agradable—Intensa—Muy intensa*).

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