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Restorative servicescapes in health care: examining the influence of hotel-like attributes on patient well-being

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Restorative servicescapes in healthcare: Examining the influence of hotel-like attributes on patient well-being

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HIGHLIGHTS

- The role of hospitality in the patient experience has been increasingly recognized.
- Study uses servicescape theory and cue utilization theory to develop and test two nested models.
- Stronger model demonstrates the direct impact of hotel-like restorative servicescapes on patients' behavioral intentions.
- More significant relationships within the less healthy patients group, indicating greater utility from hotel-like restorative servicescapes.
- No significant differences between less healthy and more healthy patients.

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3 1 **Restorative servicescapes in healthcare: Examining the influence of hotel-like attributes on**
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6 **patient well-being**
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10 4 **Abstract**
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12 5 This study examines how 527 patients across different health states assessed the influence of
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14 6 hotel-like attributes on their well-being. Using theoretical mechanisms of attention restoration
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16 7 underlying restorative servicescapes, we postulated that hotel-like products and services will
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18 8 enhance patients' perceived well-being, which, in turn, will favorably impact their behavioral
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20 9 intentions. We also tested an alternative model that included additional direct relationships
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22 10 between hotel-like products and services and behavioral intentions, based on the tenets of cue
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24 11 utilization theory. After conducting a series of nested model comparison procedures, we
25
26 12 confirmed that the alternative model provided a theoretically and empirically stronger
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28 13 explanation for the dynamics of hotel-like restorative servicescapes. While the differences
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30 14 between less healthy and more healthy patients were not statistically significant, the less healthy
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32 15 group demonstrated the same pattern of relationships as in the overall model, indicating that such
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34 16 patients may be more likely to derive greater restorative benefits from hotel-like hospital rooms,
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36 17 which may also make them more likely to pay higher out-of-pocket expenses for such rooms.
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38 18 The study furthers the empirical research agenda on evidence-based design (EBD) and the role of
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40 19 hospitality in healthcare.
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49 21 **Keywords**
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51 22 hospitality in healthcare; evidence-based design; patient experience; well-being, attention
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53 23 restoration theory
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24 Introduction

25 The movement towards well-being has been under way for several years. The concept of well-
26 being stems from related discussions of quality of life (QOL), life satisfaction, happiness, and
27 eudemonia (Sirgy, 2012). Recently, the field of hospitality and tourism has seen a proliferation
28 of research on QOL and well-being, with studies relating to the major constituencies of
29 residents/host communities and tourists, showing that tourism experiences have a significant
30 effect on both travelers' overall life satisfaction and residents' well-being (Suess, Baloglu, &
31 Busser, 2018; Uysal, Sirgy, Woo, & Lina, 2016). In the field of environmental psychology as it
32 applies to healthcare, research on evidence-based design (EBD) (Ulrich, 2001; Ulrich et al.,
33 2008) has demonstrated that the quality of physical environments and a service-oriented culture
34 in healthcare institutions can positively impact the quality of care patients receive and
35 subsequent medical outcomes. Combining these two domains, research on the concept of
36 *hospitality meets healthcare* has emerged in the two focal areas of medical, health and wellness
37 tourism (Hall, 2013), and the application of hospitality elements in the healthcare environment
38 (Severt, Aiello, Elswick, & Cyr, 2008; Wu, Robson, & Hollis, 2013).

39 The present study is situated within *hospitality meets healthcare*, and empirically
40 examines the application of hotel-like attributes in the hospital environment, with patient well-
41 being as a critical mediator. We leverage the theoretical mechanisms underlying the concept of
42 *restorative servicescapes* (Rosenbaum, 2009; Rosenbaum & Massiah, 2011; Rosenbaum &
43 Smallwood, 2011) to develop and test a model based on Suess and Mody's (2017) *Framework*
44 *for Hospitality Healthscapes*, which:

- 45 1. Examines the extent to which hotel-like products and services in a hospital room
46 contribute to patient well-being.

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3 47 2. Examines whether an enhanced level of patient well-being contributes to positive
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5 48 behavioral outcomes and a willingness to pay higher out-of-pocket expenses.
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8 49 3. Examines the above-mentioned relationships for patients in different health states.
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12 51 In addition to the model above, we explore the tenets of cue utilization theory to develop
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14 52 and test an alternative model that includes additional, direct relationships between hotel-like
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16 53 products and services and patients' behavioral intentions. Following a comparison of the two
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18 54 models using a series of nested model comparison procedures, we demonstrate that the
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20 55 relationships suggested by the concept of restorative servicescapes (and its underlying theoretical
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22 56 mechanism of attention restoration) and cue utilization theory provide a theoretically and
23
24 57 empirically stronger explanation for the dynamics of hotel-like restorative servicescapes.
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26 58 Moreover, the differences between *less healthy* and *more healthy* patient groups indicate the
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28 59 salience of these relationships for less healthy patients.
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33 60 By examining the restorative potential of hotel-like hospital rooms, we demonstrate that
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35 61 the theoretical mechanisms of both attention restoration theory and cue utilization theory make
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37 62 the case for healthcare institutions to put the patient experience front and center. To make
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39 63 patients want to choose them as a primary care provider, above and beyond clinical excellence,
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41 64 hospitals can strategically design restorative environments using products and services typically
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43 65 found in hotels. Moreover, through our focus on *soft attributes*—those requiring minor
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45 66 refurbishment or services that do not require changes to the core physical infrastructure of the
46
47 67 hospital—we demonstrate that creating restorative hospitality-oriented servicescapes in a
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49 68 healthcare setting need not be logistically prohibitive, and that our recommendations apply
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51 69 equally to existing facilities as they do to greenfield projects. Finally, that our results indicated a
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3 70 propensity for patients to pay extra for hotel-like hospital rooms demonstrates a potential for
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5 71 return on investment for hospitals, i.e., servicescape enhancements are supported by customer
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7 72 demand for such environments. *These results supplement previous research by Deloitte which*
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10 73 *indicates that hospitals with better patient-reported experience perform better financially, both in*
11
12 74 *terms of increased revenue and higher net margins (Betts et al., 2016).*

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15 75 Our findings are currently evidenced in existing major hospitals in the U.S. (Bernstein,
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17 76 2012; Rosenthal, 2013)—including elegant in-room gourmet dining at the Mayo Clinic, designer
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19 77 furniture and dramatic LED mood lighting at the Children’s Hospitals and Clinics of Minnesota,
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21 78 Ritz-Carlton-trained healthcare staff at the Erlanger Health System in Chattanooga, Tennessee,
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23 79 high-thread-count Italian bed linen at the New York Presbyterian, and artwork at the Montefiore
24
25 80 Health System in New York and Cleveland Clinic’s Art Program, among others. *These features*
26
27 81 *and services are either built into the price that is billed directly to patients or paid for out-of-*
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29 82 *pocket (Weed, 2016). While private health insurance typically provides patients with a greater*
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31 83 *choice in hospitals, the call for more competitive public health insurance that also enables*
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33 84 *greater choice*—as evidenced in the recently proposed Medicare-X Choice Act of 2019—and the
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35 85 *substantial growth in both public and private insurance expenditures [now amounting to \$3.5*
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37 86 *trillion in 2017 (up from \$1.37 trillion in 2000, and \$2.6 trillion in 2010), and accounting for*
38
39 87 *1/6th of the U.S. economy]—including growth in per capita and out-of-pocket health spending*
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41 88 *(“Health Care: The Big Picture,” n.d.; National Health Expenditures 2017 Highlights, n.d.;*
42
43 89 *Kamal & Cox, 2018)—demonstrate the urgent need for healthcare industry leaders to design*
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45 90 *more hospitable, restorative servicescapes or risk being left behind in an increasingly*
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47 91 *competitive, patient experience-oriented healthcare environment.*
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93 **Literature Review**

94 *Restorative Environments: Attention Restoration Theory (ART) and Restorative Servicescapes*

95 The conceptual foundation for the present study lies in the literature on restorative environments,
96 within which the attention restoration theory (ART) and Ulrich's psychophysiological stress
97 reduction framework dominate the restoration perspectives in environmental psychology
98 (Korpela & Hartig, 1996). ART posits that "humans do not inherently possess an ability to
99 expend concentrated effort on strenuous tasks for extended periods" (Rosenbaum & Massiah,
100 2011, p. 479). Consequently, that people's everyday lives often require that these tasks be
101 performed means that attention fatigue can cause a person to experience a variety of
102 physiological, emotional, and psychological symptoms, including lower mental competence,
103 increased blood pressure, stress, and irritability, among others (Hartig et al., 2003). Most
104 applications of ART have sought to examine the power of nature and natural settings to alleviate
105 the symptoms associated with attention fatigue (Berto, 2014; Kaplan, 1995). For example, in a
106 campus setting, Felsten (2009) found that college students with views of dramatic nature murals,
107 especially those with water, perceived greater restorative benefits than those settings with
108 window views of real but mundane nature with built structures present. In another application,
109 Lee et al. (2015) found that even 40-second "micro-breaks" that offered city scenes with a
110 flowering meadow green roof boosted sustained attention and successful cognitive functioning.

111 However, beyond this emphasis on nature, other research has broadened the ART agenda
112 by examining the restorative potential of spaces, more generally. For example, Hartig et al.
113 (1997) developed the Perceived Restorativeness Scale (PRS), comprising four dimensions, to
114 identify and measure the factors that can be incorporated into the design of restorative
115 environments; their scale was subsequently validated across a variety of environments, including

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3 116 individuals' "favorite places" (Korpela & Hartig, 1996), to demonstrate its general applicability
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5 117 beyond natural, outdoor settings. Rosenbaum and colleagues built on Hartig's work on the
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7 118 restorative potential of spaces to develop the concept of *restorative servicescapes*, a concept they
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10 119 used to examine how the restorative potential of environmental stimuli can be used to elicit
11
12 120 desirable customer outcomes. For example, Rosenbaum (2009) found that teenagers who
13
14 121 patronized a "third place" with perceptibly restorative qualities—a video arcade—were
15
16 122 significantly less likely to be at risk for experiencing ADHD. Similarly, Rosenbaum and
17
18 123 Smallwood (2011) linked ART with the servicescape framework to demonstrate empirically that
19
20 124 "home-like" cancer resource centers allowed their members to undergo restoration from
21
22 125 symptoms associated with cancer-related fatigue, and improved their emotional well-being. The
23
24 126 concept of restorative servicescapes has been extended to other consumption settings as well,
25
26 127 e.g., casinos (Rosenbaum & Wong, 2015), shopping malls (Rosenbaum, Otolara, & Ramírez,
27
28 128 2016), seniors centers (Rosenbaum, Sweeney, & Massiah, 2014), and even vacation destinations
29
30 129 (Lehto, 2013). Healthcare represents a natural extension to restorative servicescape theory, given
31
32 130 this recognition that "beyond approach or avoidance behaviors and a willingness to buy, a
33
34 131 consumption setting's built environment may also promote a healing mechanism that is essential
35
36 132 to human health and personal well-being" (Rosenbaum, 2009, p. 175). In the healthcare domain,
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38 133 the emphasis on restorative servicescapes has manifested in research based on Ulrich's
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40 134 psychophysiological stress reduction framework, a stream of literature referred to as evidence-
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42 135 based design (EBD).

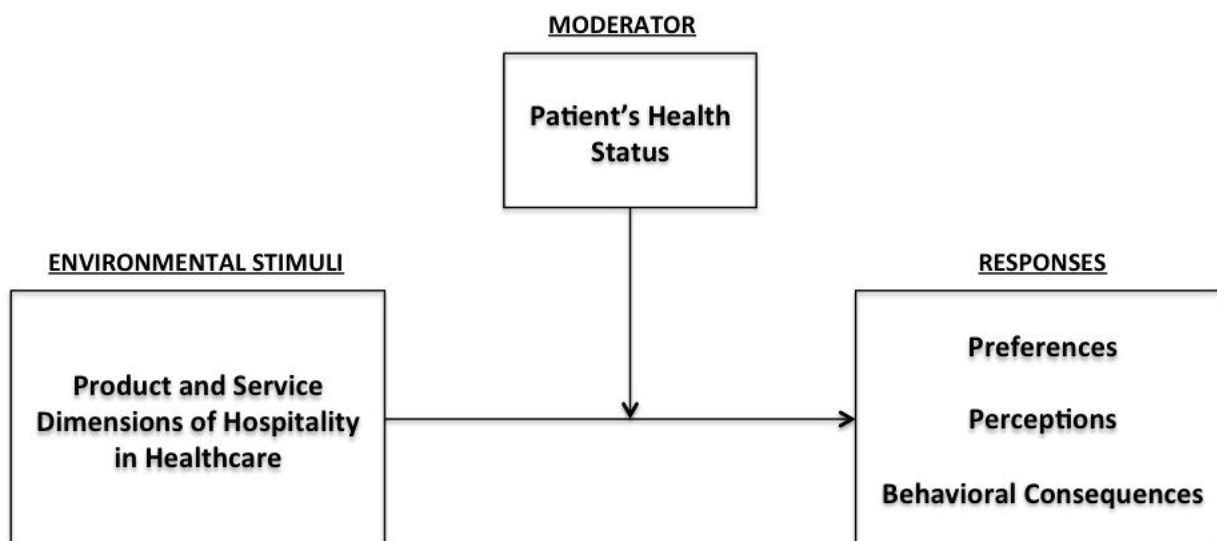
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51 137 *Restorative Servicescapes in Healthcare: Evidence-based Design (EBD)*52
53 138 The most relevant work on restorative environments that promote patient healing and well-being
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3 139 is found in the EBD literature. The origins of EBD in healthcare lie in Ulrich's (1991) theories
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5 140 on the physical and social environment, from which Bitner's (1992) Servicescape was developed
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7 141 as a formal theoretical framework to demonstrate that the dimensions of physical design,
8
9 142 ambience, wayfinding, social, natural, and even cyber aspects of the environment influence
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11 143 consumers and employees across service organizations (Rosenbaum, 2018). Healthcare
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13 144 researchers within EBD initially used the servicescape framework to demonstrate that "the
14
15 145 design of the built environment can enhance the quality of healthcare" (Malkin, 2003, p. 1).
16
17 146 However, beyond the built environment, more recent research within EBD has emphasized the
18
19 147 importance of service-related attributes. For example, Vinagre and Neves (2008) found that
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21 148 patients who experienced better service quality in hospitals were significantly more satisfied with
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23 149 the hospital's medical staff—doctors and nurses—and the hospital's overall service performance.
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25 150 More recently, Steele et al. (2015) identified a variety of hospitality-oriented service interaction
26
27 151 elements that enhance patient satisfaction. Thus, the importance of the service experience in the
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29 152 new consumer-oriented healthcare system has complimented the importance of physical design
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31 153 and ambience dimensions (Fottler, Ford, Roberts, & Ford, 2000).

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33 154 While both physical design and service attributes contribute to overall healthcare quality
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35 155 and patient satisfaction, there is a dearth of empirical research that assesses their holistic impact
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37 156 on patient outcomes and behavioral intentions. Specifically, research on the application of
38
39 157 hospitality elements to the healthcare industry is mainly conceptual (e.g., Klaus, 2018),
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41 158 descriptive (e.g., Wu et al., 2013), or case-based (e.g., Severt et al., 2008). In a rare recent
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43 159 empirical application, Sues and Mody (2018a) examined the impact of a hospitable healthcare
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45 160 servicescape comprising both product (i.e., atmospherics, physical design, and wayfinding) and
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47 161 service (i.e., service delivery by healthcare staff) dimensions on patient satisfaction and
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3 162 behavioral intentions. However, given that the EBD research agenda emphasizes theories and
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5 163 practices that transform human health and well-being (Rosenbaum, 2018), beyond a focus on
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7 164 patient satisfaction and clinical outcomes (Frisch, 2012; McCullough, 2009; Ulrich et al., 2008),
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10 165 the present study focuses on patient perceived well-being as an important mediating variable
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12 166 between a product and service-oriented hotel-like healthcare environment and patient behavioral
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15 167 intentions. Moreover, with the exception of the study by Andrade and Devlin (2015) assessing
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17 168 patients' sensory abilities and changes associated with their stress, and another by Suess and
18
19 169 Mody (2017) which presented a series of hotel-like modifications to a hospital room designed to
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21
22 170 enhance patient well-being, previous research has devoted little attention to identifying specific
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24 171 attributes that elicit favorable responses in hospital room spaces, in terms of well-being. Thus,
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26 172 little is known about what specific products (i.e., artwork, furniture, lighting, color, aroma, etc.)
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28 173 and services (i.e., food and beverage, concierge, spa and salon, etc.), when present in a hospital
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31 174 setting, systematically elicit well-being and how these relationships differ across patients in
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33 175 different health states. Such evidence would help advance the EBD agenda in the context of
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35 176 hospitality meets healthcare.

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38 177 To fill these gaps in the literature, we used Suess and Mody's (2017) *Framework for*
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40 178 *Hospitality Healthscapes* (Figure 1) as a basis for developing our subsequent empirical model.
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42 179 The theoretical mechanism underlying the framework (Figure 1) and our empirical model, i.e.,
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44 180 ART, presented in Rosenbaum's work on restorative servicescapes and extrapolated to a broader
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47 181 emphasis on well-being (as opposed to only attention fatigue) in the EBD agenda, provides the
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49 182 conceptual foundation for the present research. We discuss the hypotheses comprising our
50
51 183 empirical model in the following sections.
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186 **Figure 1.**
187 Framework for Hospitality Healthscapes (Suess & Mody, 2017).
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189
190 *Perceived Well-being*

191 The application of design and service elements in healthcare that influence patient well-being has
192 become a focus of research in the last decade, across a number of fields of study including
193 healthcare management (e.g., Fottler et al., 2000; Hutton & Richardson, 1995), environmental
194 psychology (e.g., Andrade et al., 2012; Andrade and Devlin, 2015; Ulrich, 1991, 2001), interior
195 design (e.g., Lee, 2011; Wu et al., 2013) informal therapeutic environments (e.g., Parr, 1999),
196 hospitality (e.g., Hollis & Verma, 2015; Suess & Mody, 2017, 2018a, 2018b), services
197 management (e.g., Erickson & Rothberg, 2017; Lee & Lee, 2013) and forestry, environment and
198 social sciences (e.g., Hartig et al., 2011).

199 Lazarus and Folkman (1984) conceptualize well-being as the subjective experience of the
200 patient within an environment which they appraise to be either stressful or taxing on either their
201 physical or psychological processes. As noted by Tanja-Dijkstra (2011), the patient circumstance

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3 202 is innately stressful. Limited mobility and painful medical procedures are sources of immense
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5 203 stress (Kiecolt-Glaser et al., 1998). Patients may have any number of sources promoting
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8 204 psychological stress, such as uncertainty related to recovery time, interruption of everyday life,
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10 205 and worries about family and work obligations (Powell & Johnston, 2007). Moreover, there is a
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12 206 growing body of evidence—both empirical and anecdotal—that hospitals do little to ameliorate
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14 207 patient stress; in fact, in most cases, the operations and environments of hospitals exacerbate
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17 208 stress (Taylor, 2011). Hospital stressors, in turn, impede patients' recoveries and compromise
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19 209 their well-being (Ulrich, 1991).

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22 210 Thus, it is imperative that the stress that patients experience in a healthcare environment
23
24 211 be reduced as much as possible. As noted previously, Ulrich (1991) has evidenced how a
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26 212 supportive physical and social healthcare environment affects patients' well-being, by reducing
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28 213 stress and enabling healing. More recently, Lee et al. (2013) suggested the use of subjective well-
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31 214 being as a measure of quality in healthcare through the various stages of the treatment process.
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33 215 Similarly, Hutton and Richardson's (1995) healthscapes model emphasizes the need to measure
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35 216 the physical and mental well-being of all environmental participants. Building on Hutton and
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37 217 Richardson's healthscapes model, Suess and Mody (2018b) proposed that a patient's experience
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40 218 of Ulrich's supportive hospitality attributes in a hospital room promotes well-being if the
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42 219 attributes foster a sense of control (e.g., on-demand food and beverage, spa/salon services, mood
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44 220 lighting, etc.) create positive distractions (e.g., ambience from interior décor, aromatherapy, etc.)
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47 221 and provide access to social support (e.g., hospitable service from healthcare staff, concierge
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49 222 services, etc.).

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51 223 Given that Suess and Mody's (2018b) supportive design model emphasizes the impact of
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53 224 hotel-like attributes on patients' physical and mental well-being, we hypothesize:

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3 225 **Hypothesis 1 (H₁):** Patients derive higher levels of well-being from hotel-like products in
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5 226 the hospital room.

7 227 **Hypothesis 2 (H₂):** Patients derive higher levels of well-being from hotel-like services in
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10 228 the hospital room.

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15 230 *Behavioral Intentions*

17 231 While patient well-being is an important outcome in and of itself, we recognize that hospital
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19 232 administrators and physicians continue to operate in a value-based purchasing or pay for
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21 233 performance environment (Sadler, DuBose, & Zimring, 2008), whereby patient-reported levels
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23 234 of satisfaction are tied to hospital reimbursement. Administrators are required to report patients'
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25 235 satisfaction with their experiences through the Hospital Consumer Assessment of Healthcare
26
27 236 Providers and Systems (HCAHPS), and the in-patient experience of a hospital room—including
28
29 237 hotel-like attributes—could have significant influence on their satisfaction with the hospital,
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31 238 resulting in a lasting impact on a hospital's market share and top and bottom lines. Moreover,
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33 239 changes in health insurance and medical mobility now allow patients to choose from a variety of
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35 240 doctors and hospitals, making the hospital experience an important determinant in hospital
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37 241 choice.

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42 242 This perspective of patient as customer and the application of hospitality elements to the
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44 243 patient experience is evidenced in early studies. In one of the first studies on this topic, Hepple,
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46 244 Kipps, and Thomson (1990) found that hospitality factors pertaining to tangible elements—the
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48 245 hospital product based on its physical environment—contributed to a satisfactory hospital stay
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50 246 and favorable patient behavior. From a service perspective, in evaluating the hotel function of a
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52 247 hospital, Oz et al. (2001) found that better customer service, in terms of parameters such as

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3 248 courtesy, promptness, and cleanliness, leads to significantly higher patient satisfaction levels on
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5 249 post-experience surveys. Goldman and Romley (2011) found that one standard deviation
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7 250 increase in a hospitable environment within a hospital raises its demand by 38.5%, on average,
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10 251 much more so than improvements in various measures of clinical quality. Swan, Richardson, and
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12 252 Hutton (2003) found that patients in hotel-like hospital rooms evaluated their physicians, nurses,
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14 253 and the hospital's overall service performance significantly higher. In sum, creating more
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16 254 aesthetically appealing hospital environments, with superior levels of customer service, has a
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18 255 ripple effect on patient perceptions during and after their hospital stay, contributing to higher
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20 256 customer satisfaction, loyalty, and word of mouth (WOM) recommendations. Thus, in addition
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22 257 to patients' well-being, one must examine behavioral outcomes that are important to the financial
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24 258 success of the healthcare institution (Fottler et al., 2000; Lee et al., 2013).

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28 259 While customer preferences for products and services have been extensively evaluated in
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30 260 the hotel context, there is a lack of empirical research related to consumer behavioral outcomes
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32 261 in the healthcare context (Han, 2013). Behavioral outcomes represent desirable, approach-related
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34 262 customer behaviors. In a rare empirical application in the context of elderly care, Lee and Severt
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36 263 (2017) found that providing a rich hospitality service culture in the form of tangibles (i.e.,
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38 264 product features) and empathetic and interactive staff care (i.e., service features) positively
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40 265 impacted resident loyalty outcomes i.e., satisfaction and intentions to spread positive WOM .
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44 266 In the hospitality literature, in addition to the customer's behavioral intentions i.e.,
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46 267 likelihood to choose a particular hotel/hotel room, researchers also assess the customer's
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48 268 willingness to pay for specific products and services. For example, Millar and Baloglu (2011)
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50 269 evaluated guests' preferences and willingness to pay more for green products and services in
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52 270 hotel rooms. Similarly, Heo and Hyun (2015) found that guests were more likely to choose and
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3 271 willing to pay more for hotel rooms with specific luxury products and services. Thus, in the
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5 272 present study, in addition to behavioral intentions i.e., likelihood to choose, we include patients'
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7 273 willingness to pay higher out-of-pocket expenses for hotel-like products and services in the
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9 274 hospital room as an important behavioral outcome. We propose the following hypotheses:

12 275 **Hypothesis 3 (H₃):** Patients who derive higher well-being are more likely to choose a
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14 276 hotel-like hospital room over a regular hospital room.

17 277 **Hypothesis 4 (H₄):** Patients who derive higher well-being are more willing to pay higher
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19 278 out-of-pocket expenses for a hotel-like hospital room.

21 279 **Hypothesis 5 (H₅):** Patients who are more likely to choose a hotel-like hospital room
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23 280 over a regular hospital room are also more willing to pay higher out-of-pocket expenses
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25 281 for a hotel-like hospital room.

28 282 29 30 283 *Moderating Effects of Patient Health States*

31 284 Researchers in healthcare have identified the importance of understanding differences between
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33 285 patients in varying health conditions. For example, Hepple et al. (1990) found that patients
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35 286 preferred specific hospitality factors over others based on their medical conditions, such as their
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37 287 length of hospital stay, and relatedly, their levels of anxiety. Similarly, Lee's (2011) conceptual
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39 288 framework posits that a patient's physical and emotional state can lessen or intensify the strength
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41 289 of the relationship between servicescape elements and patient responses. Hutton and Richardson
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43 290 (1995) identified a host of situational factors that potentially moderate the relationship between
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45 291 the healthscape and patient responses, on the basis of which Sues and Mody (2017) used patient
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47 292 health status as a primary moderator impacting patient preferences for a hotel-like hospital room.
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49 293 Patients' health conditions invoke unique demands and requirements (Ouellette & Wood, 1998),
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3 294 thus understanding changes in experience and behavior associated with such conditions can help
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5 295 hospitals provide optimal inpatient experiences to different segments of patients. In the present
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8 296 context, according to the theory of consumer demand, one would expect that patients who are
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10 297 less healthy would derive greater utility from the infusion of hospitality in healthcare. Thus, we
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12 298 present the following additional hypotheses to supplement the results from testing the overall
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14
15 299 model:

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17 300 **Hypothesis 6 (H₆):** Patients who are less healthy are likely to derive higher levels of
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19 301 well-being from hotel-like products in the hospital room than patients who are more
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21 302 healthy.

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23 303 **Hypothesis 7 (H₇):** Patients who are less healthy are likely to derive higher levels of
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25 304 well-being from hotel-like services in the hospital room than patients who are more
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27 305 healthy.

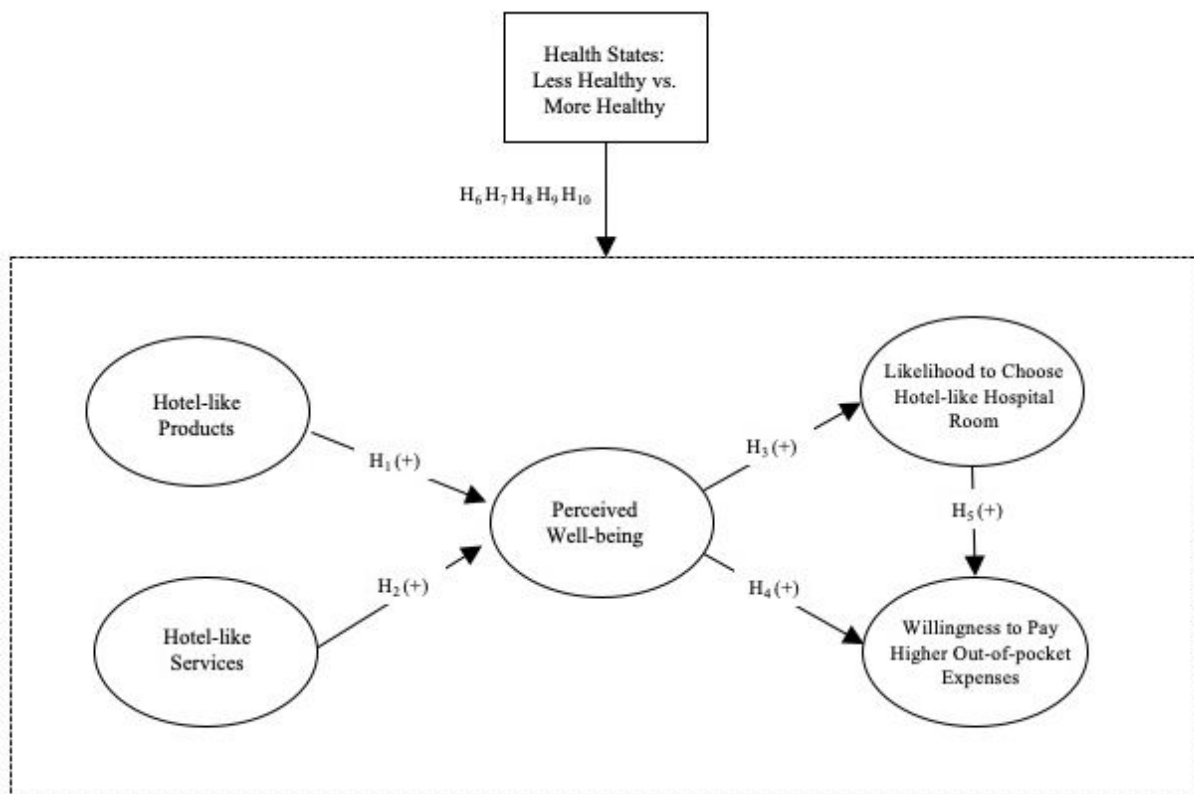
28
29 306 **Hypothesis 8 (H₈):** Less healthy patients who derive higher levels of well-being are also
30
31 307 more likely to choose a hotel-like hospital room over a regular hospital room than
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33 308 patients who are more healthy.

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35 309 **Hypothesis 9 (H₉):** Less healthy patients who derive higher levels of well-being are also
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37 310 more willing to pay higher out-of-pocket expenses than patients who are more healthy.

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39 311 **Hypothesis 10 (H₁₀):** Less healthy patients who are more likely to choose a hotel-like
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41 312 hospital room over a regular hospital room are also more willing to pay higher out-of-
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43 313 pocket expenses than patients who are more healthy.

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47 315 Figure 2 represents the model that comprises the various hypotheses that we test in the
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49 316 present study. As evident, the model follows directly from Sues and Mody's (2017) Framework
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for Hospitality Healthscapes presented in Figure 1, and is used to empirically assess the various relationships suggested by but not previously tested in the context of the framework. Moreover, the model is built on the theoretical mechanisms underlying the concept of restorative servicescapes, combining the understanding from ART that strenuous tasks lead to attention fatigue (in the case of hospital patients, a loss of well-being), and that the restorative qualities of servicescapes can be used to reverse such symptoms, i.e., consumption settings can be imbued with restorative stimuli (in the present study, hotel-like product and service attributes). Thus, the model leverages the processual dynamics of servicescape theory to examine the restorative effects of hospitality in healthcare.



326

327 **Figure 2.**

328 Empirical Model for Hotel-like Restorative Servicescapes (Model A).

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330

331 *Alternative Model*

332 While the empirical model presented in Figure 2 (model A) is developed based on a sound
333 theoretical rationale, the case for an alternative, expanded model is made by the tenets of cue
334 utilization theory. According to the cue utilization theory, “products or services consist of an
335 array of cues that serve as surrogate indicators of the product’s quality” (Reimer & Kuehn, 2005,
336 p. 786). Consumers take these cues (or attributes) into consideration in making a purchase
337 decision (Olson & Jacoby, 1972). For example, Bao, Bao, and Sheng (2011) found that
338 intangible extrinsic cues such as store image, product signatureness, and quality variation
339 significantly impacted consumers’ purchase intentions for private store brands. In the case of
340 services, like hospital rooms, marketing theory suggests that consumers use the information
341 derived from cues in a distinctive way to reduce the uncertainty associated with services, which,
342 in turn, influences their purchase decision and other behaviors in a consumption setting (Murray,
343 1991; Namasivayam & Lin, 2008). For example, in a hospital setting, consistent with the tenets
344 of cue utilization theory, Pai and Chary (2014) found that the healthscape exerted a stronger
345 influence on behavioral intentions than even overall service quality. This idea that the
346 servicescape, which comprises the cues that consumers use in making a purchase decision,
347 serves as direct antecedent of their behavioral intentions (purchase probability and repurchase
348 and recommendation behavior) has also been suggested in the servicescape literature (Harris &
349 Ezeh, 2008; Hooper, Coughlan, & Mullen, 2013; Mari & Poggesi, 2013). Moreover, Rosenbaum
350 and colleagues (e.g., Rosenbaum, 2009; Rosenbaum & Massiah, 2011) have also suggested that
351 servicescapes not only promote restoration but also directly influence approach or avoidance
352 behaviors and a willingness to buy.

353 Thus, based on the tenets of cue utilization theory, and the literature within the

1
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3 354 servicescape framework on the consequential importance of cues, we posit that patients'
4
5 355 perceptions of restorative hotel-like stimuli (products and services) will evoke internal responses
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7 356 to (i.e., a higher level of perceived well-being) *and* directly influence their behaviors towards
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10 357 hospital patronage (Rosenbaum & Smallwood, 2011). This proposition translates into the
11
12 358 following additional (direct and moderation) hypotheses in an alternative, expanded empirical
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14
15 359 model B (presented in Figure 3):

16
17 360 **Hypothesis 11 (H₁₁):** Patients are more likely to choose a hotel-like hospital room over a
18
19 361 regular hospital room if hotel-like products are more important to them.

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21 362 **Hypothesis 12 (H₁₂):** Patients are more likely to choose a hotel-like hospital room over a
22
23 363 regular hospital room if hotel-like services are more important to them.

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25 364 **Hypothesis 13 (H₁₃):** Patients are more willing to pay higher out-of-pocket expenses if
26
27 365 hotel-like products are more important to them.

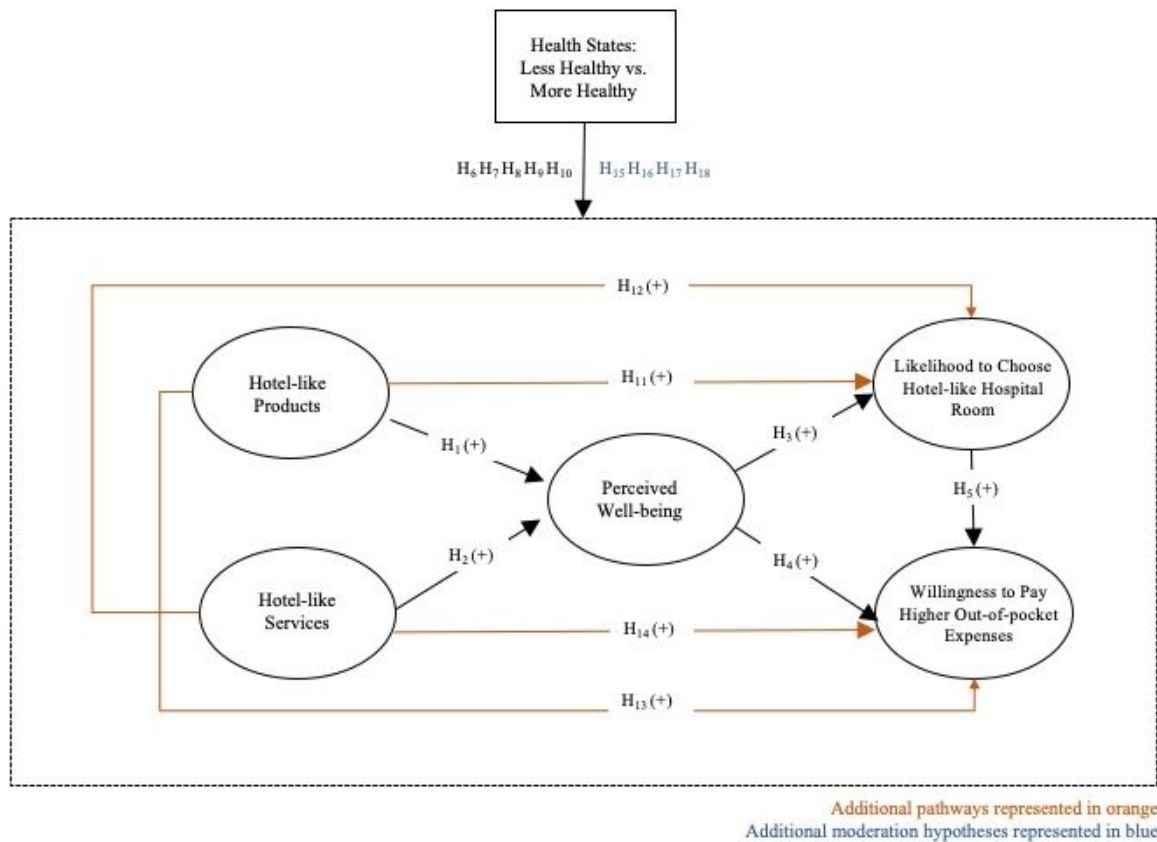
28
29 366 **Hypothesis 14 (H₁₄):** Patients are more willing to pay higher out-of-pocket expenses if
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31 367 hotel-like services are more important to them.

32
33 368 **Hypothesis 15 (H₁₅):** Patients who are less healthy are more likely to choose a hotel-like
34
35 369 hospital room over a regular hospital room if hotel-like products are more important to
36
37 370 them.

38
39 371 **Hypothesis 16 (H₁₆):** Patients who are less healthy are more likely to choose a hotel-like
40
41 372 hospital room over a regular hospital room if hotel-like services are more important to
42
43 373 them.

44
45 374 **Hypothesis 17 (H₁₇):** Patients who are less healthy are more willing to pay higher out-of-
46
47 375 pocket expenses if hotel-like products are more important to them.

376 **Hypothesis 18 (H₁₈):** Patients who are less healthy are more willing to pay higher out-of-
 377 pocket expenses if hotel-like services are more important to them.



378

379 **Figure 3.**
 380 Alternative Empirical Model for Hotel-like Restorative Servicescapes (Model B).

381

382 Study

383 Data Collection

384 We used a panel provided by Qualtrics to collect the sample for our study. An online survey was
 385 sent to patients who had spent at least one night in a hospital in the previous six months. This
 386 ensured that the context of the survey i.e., the infusion to hospitality in healthcare was highly
 387 relevant to the respondents. No additional incentives for participation were given beyond those
 388 provided by Qualtrics.

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3 389 *Survey Design and Scale Development*
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5 390 The first section of the survey included situational questions related to the respondent's hospital
6
7 391 stays as an inpatient in the past six months—duration and frequency—and their perceived mental
8
9 392 and physical health (at the time of the survey). We then used a quasi-experimental survey design
10
11 393 to collect data for the remaining sections. The second section comprised questions about the
12
13 394 importance respondents place on specific hotel-like product and service attributes. We focused
14
15 395 on what we call *soft attributes*, those requiring minor refurbishment or services that do not
16
17 396 require changes to the core physical infrastructure of the hospital. While some research has
18
19 397 examined the impact of hospital rooms that provide more extensive features such as additional
20
21 398 suites, living and kitchen areas for family/friends, luxury bathrooms with marble bath tubs and
22
23 399 rain showers, or extra-large windows for additional light and with strategic views to nature
24
25 400 (Ulrich, 1984), these are *hard* renovations that need to be planned for in the design stages of the
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27 401 hospital and cannot be readily incorporated into existing hospitals. We developed an initial list of
28
29 402 twenty hotel-like attributes based on a review of the academic literature (e.g., Hollis & Verma,
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31 403 2015; Ulrich et al., 2008; Wu et al., 2013) and industry reports (e.g., Bernstein, 2012; “Inside the
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33 404 Hospital Room of the Future,” 2015; Rosenthal, 2013) on the hotel-like features offered in
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35 405 current and prototype hospital rooms. These attributes were then discussed in a focus group with
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37 406 physicians at a major medical center. Based on the physicians' expert input about the validity
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39 407 and relevance of these attributes in contributing to patient well-being, and our assessment of the
40
41 408 “softness,” prevalence, and feasibility of the features for both existing and new facilities, a total
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43 409 of ten attributes was retained. Respondents were exposed to a hypothetical hospital room
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45 410 incorporating the ten hotel-like products and services, represented in the form of annotated 3D
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3 411 rendering, and they rated these attributes on a seven-point Likert scale (1 = Not at all important
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5 412 to 7 = Extremely important).

6
7 413 The third section of the survey asked respondents to rate the level of perceived well-being
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9 414 they would derive from staying at the hypothetical hotel-like hospital room, and their likelihood
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11 415 to choose and willingness to pay higher out-of-pocket expenses for such a room. We measured
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13 416 perceived well-being—a combination of physical and mental well-being—using Tseng and
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15 417 Shen's (2014) scale, which comprised six items measured on a seven-point Likert scale (1 =
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17 418 Strongly disagree to 7 = Strongly agree). Respondents' likelihood to choose and willingness to
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19 419 pay for a hotel-like hospital room were measured on a seven-point Likert scale (1 = Not at all
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21 420 likely to 7 = Extremely likely) using questions adapted from Millar and Baloglu (2011). The
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23 421 fourth section included demographic questions including gender, age, income, education,
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25 422 employment, race and ethnicity.

26
27 423 We first administered a pilot survey to fifteen academics in the field of hospitality—thus,
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29 424 individuals with subject matter expertise—to check for length, clarity, and comprehensiveness of
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31 425 the various measures. We made some minor adjustments to the survey based on the feedback
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33 426 from the academics; most notably, we added descriptions for two hotel-like attributes that were
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35 427 not as clear as the others: *hospitality-certified healthcare staff* and *concierge services*. This pilot
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37 428 with subject matter experts helped strengthen construct validity (Kasunic, 2005). A second pilot
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39 429 was then conducted with fifty target respondents, **who met the criteria of having spent at least**
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41 430 **one night in a hospital in the previous six months. We conducted exploratory factor analysis**
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43 431 **(EFA) on this pilot sample to examine whether the proposed constructs adhered to the**
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45 432 **hypothesized factor structure. We conducted EFA separately on the ten hotel-like attributes and**
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47 433 **the perceived well-being items. Results indicated a two-factor structure for the ten hotel-like**
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3 434 attributes, while one factor was extracted comprising the six perceived well-being items. These
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5 435 results, which provided initial validation of our hypothesized factor structure, allowed us to
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7 436 collect data for the main (overall) sample, which was used for structural modeling. Our item
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9 437 generation and initial assessment processes, and the use of independent samples for exploratory
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11 438 and confirmatory analyses are consistent with the scale development process suggested by
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13 439 Hinkin (1998).
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19 441 *Analysis*

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21 442 For the first stage in analyzing the data collected for the main (overall) sample, we conducted a
22
23 443 confirmatory factor analysis (CFA) on the constructs used in empirical models A and B to test
24
25 444 for validity and reliability. We then tested the two competing models using structural equation
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27 445 modeling (SEM), and compared them using nested model comparison procedures, including a
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29 446 chi-square difference test, an assessment of path significance, and effect size testing. This
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31 447 allowed us to determine which of the two models (model A or model B) provided a stronger
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33 448 theoretically-founded explanation for the dynamics of hotel-like restorative servicescapes. In the
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35 449 second stage of analysis, following a test of measurement invariance, we used multiple group
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37 450 moderation procedures and pairwise parameter comparisons to examine the differences between
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39 451 patients in the less healthy and more healthy groups, for the stronger model (model A or model
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41 452 B) as determined in the first stage. We divided the overall sample into these two groups using k-
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43 453 means cluster analysis.
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3 **457 Results**
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5 *458 Check for Non-response Bias*
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8 **459** Before analyzing the data, we conducted a check for non-response bias, given the self-selected
9
10 **460** nature of online panel responses. In this regard, our panel provider (Qualtrics) has in place
11
12 **461** procedures that help minimize bias in two ways. First, the subject of the study is not revealed to
13
14 **462** respondents before they enter the survey, which helps minimize self-selection bias. Second, the
15
16 **463** company's platform randomly assigns respondents to a survey that they will likely qualify for
17
18 **464** based on their responses to periodic refinement questions that enable better targeting. This helps
19
20 **465** minimize self-selection bias and ensure that non-response is more of a random event versus a
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22 **466** systematic event.
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26 **467** We followed an additional recommended procedure to check for non-response bias:
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28 **468** comparing scores on key metrics from early and late respondents. Late respondents are theorized
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30 **469** to have similarities with non-respondents; thus, significant differences between early and late
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32 **470** respondents can be considered an estimate of non-response bias. Following Christofor (2008),
33
34 **471** we compared the first and last third of our survey data on the key constructs of the present study:
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36 **472** respondents' ratings of the importance of the various hotel-like attributes, their perceived well-
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38 **473** being, likelihood to choose a hotel-like hospital room, and willingness to pay higher out-of-
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40 **474** pocket expenses. We found no significant differences between the two groups of early and late
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42 **475** respondents on any of these measures; thus, we do not expect non-response bias to have affected
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44 **476** the study results.
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3 480 *Stage 1 Results: Overall Sample*
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5 481 Table 1 presents the profile of the respondents in our sample. Just over half of the respondents
6
7 482 272 (51.6%) were women. Nearly two-thirds of the sample (63%) was over 35 years old. 57.7%
8
9 483 of the respondents earned an income of US\$60,000 or less, with the largest percentage (19.9%)
10
11 484 earning between US\$45,000 and US\$60,000. Over half of the sample (53.3%) had completed
12
13 485 college level education, and more than two-thirds (68.7%) indicated that they were employed at
14
15 486 least part-time. Finally, 77.8% of the respondents were White/Caucasian, 13.3% were
16
17 487 Black/African American, and 4.9% were Asian, with the other racial categories comprising 5.7%
18
19 488 of the sample. 14.2% of the sample had a Hispanic background. These statistics are comparable
20
21 489 to U.S. Census Bureau's 2010 figures, indicating the sample's representativeness of the U.S.
22
23 490 general population. Also, the 527 respondents represented all 50 states of the U.S., and were
24
25 491 distributed across 283 different cities and towns in the country; the sample is thus geographically
26
27 492 representative of the U.S. population. Respondents were hospitalized for illnesses that ranged in
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29 493 severity from fever to a variety of surgeries.
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38 495 **Table 1.**
39 496 **Respondent Profile.**
40 497

Demographic Category	Sample Size (n = 527)	%
<i>Gender</i>		
Male	255	48.4
Female	272	51.6
<i>Age</i>		
18-25	85	16.3
26-34	109	20.7
35-54	191	36.3
55-64	90	17.1
65 or over	51	9.6

Income

Less than \$15,000	34	6.5
\$15,000 - less than \$30,000	83	15.7
\$30,000 - less than \$45,000	82	15.6
\$45,000 - less than \$60,000	105	19.9
\$60,000 - less than \$75,000	74	14.0
\$75,000 - less than \$90,000	81	15.4
More than \$90,000	68	12.9

Education

Grade school	2	.4
High school	92	17.5
Some college	152	28.8
College	177	33.6
Graduate school	104	19.7

Employment

Employed full time	294	55.8
Employed part time	68	12.9
Unemployed looking for work	21	4.0
Unemployed not looking for work	14	2.7
Retired	67	12.7
Student	17	3.2
Disabled	46	8.7

Race

Caucasian	410	77.8
African American	70	13.3
Asian	26	4.9
Native Hawaiian	1	0.2
Native American/Alaskan	8	1.5
Other	21	4.0

Hispanic

Yes	75	14.2
No	452	85.8

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Table 2 presents the summary statistics for the items used to measure the various constructs of the model for hotel-like restorative servicescapes. In terms of hotel-like products, luxury bed linen was the most important attribute to patients (mean = 4.92). Hospitality-certified healthcare staff was the most important hotel-like service attribute (mean = 6.04). Interestingly,

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3 503 patients perceived service-like attributes to be more important than product attributes; the overall
4
5 504 mean score for hotel-like services (construct mean = 5.02) was significantly higher ($p < .001$)
6
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8 505 than the overall mean score for hotel-like products (construct mean = 4.51).
9
10 506

11
12 507 **Table 2.**
13 **Summary Statistics and Literature Sources.**
14 508
15 509

Constructs and Measurement items	Mean	SD	Adapted from
<i>Hotel-like Products^a</i>			(Suess & Mody, 2017)
Luxury bed linen	4.92	1.93	
Colorful walls	4.72	1.82	
Mood lighting	4.67	1.89	
Aroma/fragrance	4.44	2.03	
Artwork	4.00	1.97	
Designer-inspired furniture	4.00	2.02	
<i>Hotel-like Services^a</i>			(Suess & Mody, 2017)
Hospitality-certified healthcare staff	6.04	1.38	
On-demand room service	5.25	1.76	
In-room spa/salon services	4.41	2.15	
Concierge services	4.36	2.05	
<i>Perceived Well-being^b</i>			(Tseng & Shen, 2014)
I will feel more energized and less tired	5.57	1.37	
I will be able to use my mind to improve my immune system	5.25	1.60	
My body will be healthier and I will have less illness	5.00	1.68	
My moods will be stable	5.54	1.30	
I will be able to keep my emotions calm when faced with matters which make me angry	5.42	1.47	
I will be able to cope with angry and sad emotions	5.39	1.43	

Likelihood to Choose^c (Millar & Baloglu, 2011)

How likely would you be to choose a hospital room with hotel-like features over a regular hospital room? 6.16 1.22

Willingness to Pay Higher Out-of-Pocket Expenses^c (Millar & Baloglu, 2011)

To what extent would you be willing to pay higher out-of-pocket expenses for a hospital room with hotel-like features? 6.16 1.22

510 ^aMeasured using a 7-point Likert scale ranging from 1 = Not at all important to 7 = Extremely important

511 ^bMeasured using a 7-point Likert scale ranging from 1 = Strongly disagree to 7 = Strongly agree

512 ^cMeasured using a 7-point Likert scale ranging from 1 = Not at all likely to 7 = Extremely likely

513

514 *CFA Results*

515 The results of the CFA for the overall sample are presented in Table 3. Cronbach's α for the
 516 three constructs in the model ranged from .76 to .89, above the recommended .70 level
 517 (Anderson & Gerbing, 1988), indicating high internal consistency. The model indicated an
 518 acceptable fit to the data ($\chi^2/df = 3.52$; CFI = .941; IFI = .941; RMSEA = .069). While the
 519 constructs used in the present study i.e., hotel-like products, hotel-like services, and perceived
 520 well-being were developed based on an extensive review of the literature, and their hypothesized
 521 factor structures were initially tested using EFA on a separate pilot sample (discussed above), we
 522 also conducted an alternative CFA on the overall sample to validate the psychometric soundness
 523 of our primary independent constructs i.e., hotel-like products and services. In this alternative
 524 CFA, all ten items pertaining to the hotel-like attributes were loaded onto a single factor. The
 525 alternative CFA model indicated a significantly worse fit than the model comprising the
 526 hypothesized two-factor structure (χ^2 difference=116.37; $df=2$; $p < .001$), validating that hotel-
 527 like products and services do indeed represent two distinct factors and must be modeled as such.

528 We then checked for the validity of the hypothesized CFA model. All items loaded on to

529 their respective constructs with high and significant ($p < .001$) standardized (first-order) factor
 530 loadings that ranged from .690 to .799, indicating convergent validity. The AVE for each
 531 construct was higher than .50, further demonstrating convergent validity. We did encounter a
 532 discriminant validity issue, whereby the square root of the AVE for both hotel-like products and
 533 hotel-like services was marginally lower than the bivariate correlation between the two
 534 constructs ($\rho = .824$). However, given the face validity of the items measuring these constructs,
 535 and a naturally expected high correlation between them, we considered the model suitable for
 536 subsequent structural estimation.

537

538 **Table 3.**
 539 **CFA Results.**

Constructs and Measurement items	Standardized Loadings***	Cronbach's α
<i>Hotel-like Products</i>		.88
Luxury bed linen	.716	
Colorful walls	.728	
Aroma/fragrance	.721	
Mood lighting	.759	
Artwork	.765	
Designer-inspired furniture	.785	
<i>Hotel-like Services^b</i>		.76
Hospitality-certified healthcare staff	.767	
On-demand room service	.704	
In-room spa/salon services	.799	
Concierge services	.796	
<i>Perceived Well-being</i>		.89
I will feel more energized and less tired	.769	
I will be able to use my mind to improve my immune system	.741	
My body will be healthier and I will have less illness	.690	
I will be able to keep my emotions calm when faced with	.761	

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3	matters which make me angry	
4	My moods will be stable	.780
5	I will be able to cope with angry	.787
6	and sad emotions	
7		

8 541 ***significant at $p < .001$

9 542

11 543 *Common Method Variance*

14 544 Since the study collected data about both dependent and independent constructs from the same
 15
 16 545 respondent, it is necessary for check for common method variance. We used the common latent
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 18 546 factor approach using CFA to test for common method variance (Nunkoo & So, 2016), whereby
 19
 20 547 all observed items in the model were loaded onto a single factor, and the results of this common
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 22 548 factor model were compared with those of the proposed measurement model using a chi-square
 23
 24 549 difference test. The results show that the proposed measurement model fits significantly better
 25
 26 550 than the common factor model ($\Delta\chi^2 = 969.6$, $df = 3$, $p < .001$), suggesting that common method
 27
 28 551 variance was not an issue in this study.

32 552

34 553 *Multivariate Normality*

37 554 Covariance-based SEM relies on a number of assumptions, of which multivariate normality is of
 38
 39 555 primary concern. Mardia's multivariate kurtosis coefficient was high (89.34) and significant (p
 40
 41 556 $< .05$) in the present data, indicating multivariate non-normality. However, an examination of the
 42
 43 557 univariate skewness (between -1.431 and -.232) and kurtosis (between -1.125 and 1.423) indices
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 45 558 for the variables in the two models, as well as the normal quantile-quantile (QQ) plots for these
 46
 47 559 variables, indicated that the data were only marginally non-normal. The maximum likelihood
 48
 49 560 estimation technique has been shown to be fairly robust in these conditions (Bryne, 2010), and
 50
 51 561 was thus used for subsequent structural modeling.

55 562

563 *SEM Results: Nested Model Comparison*

564 We first tested the more parsimonious model A, which does not include direct relationships
 565 between the product and service-related hotel attributes and behavioral intentions (likelihood to
 566 choose and willingness to pay higher), as suggested by cue utilization theory. The structural
 567 equation model resulted in the following measures of fit to the data: $\chi^2/df = 4.43$; CFI = .907; IFI
 568 = .908; RMSEA = .081. Table 4 presents the results of the relationships tested in model A, as
 569 hypothesized in H₁ to H₅, all of which were significant. Interestingly, the estimate for the
 570 influence of hotel-like services on perceived well-being ($\beta = .881$) was significantly higher than
 571 that for the influence of hotel-like products on perceived well-being ($\beta = .155$).

573 **Table 4.**
 574 **SEM Results: Model A.**
 575

Structural Path	Estimate ^a	p-value
Hotel-like Products → Perceived Well-being (H ₁)	.155	.017
Hotel-like Services → Perceived Well-being (H ₅)	.881	***
Perceived Well-being → Likelihood to Choose Hotel-like Hospital Room (H ₃)	.622	***
Perceived Well-being → Willingness to Pay Higher Out-of-pocket Expenses (H ₄)	.701	***
Likelihood to Choose Hotel-like Hospital Room → Willingness to Pay Higher Out-of-Pocket Expenses (H ₅)	.385	***

576 ^aunstandardized estimates

577 ***significant at $p < .001$

578
 579 The alternative model (model B), which includes direct relationships between the product
 580 and service-related hotel attributes and behavioral intentions (likelihood to choose and
 581 willingness to pay higher), resulted in the following measures of fit to the data: $\chi^2/df = 3.57$; CFI

582 = .933; IFI = .933; RMSEA = .070. Using a chi-square comparison test, this model was found to
 583 have a significantly better fit than model A (χ^2 difference=127.56; $df=4$; $p < .001$). Table 5
 584 presents the results of the relationships tested in model B. All the relationships that are common
 585 to models A and B (i.e., H_1 - H_5) were also significant in model B. Of the four additional
 586 relationships tested in this model, the relationship between hotel-like products and likelihood to
 587 choose a hotel-like hospital room was insignificant ($p = .153$) (thus, rejecting H_{11}), while the
 588 other three relationships were positive and significant as hypothesized (H_{12} - H_{14}). Interestingly,
 589 the addition of the direct relationships between the product and service dimensions and
 590 behavioral intentions resulted in a significant drop in the effect of well-being on these behavioral
 591 intentions between models A and B (from .622 to .410 for likelihood to choose and from .701 to
 592 .204 for WTP) , emphasizing the strong direct effects of hotel-like attributes on patients'
 593 behavioral intentions. In effect, perceived well-being becomes a weaker mediator in the presence
 594 of these direct relationships suggested by cue utilization theory.

596 **Table 5.**
 597 **SEM Results: Model B.**
 598

Structural Path	Estimate ^a	p-value
Hotel-like Products → Perceived Well-being (H_1)	.152	.024
Hotel-like Services → Perceived Well-being (H_5)	.803	***
Perceived Well-being → Likelihood to Choose Hotel-like Hospital Room (H_3)	.410	***
Perceived Well-being → Willingness to Pay Higher Out-of-pocket Expenses (H_4)	.204	.026
Likelihood to Choose Hotel-like Hospital Room → Willingness to Pay Higher Out-of-Pocket Expenses (H_5)	.267	***

Hotel-like Products → Likelihood to Choose Hotel-like Hospital Room (H ₁₁)	-.103	.153
Hotel-like Services → Likelihood to Choose Hotel-like Hospital Room (H ₁₂)	.965	***
Hotel-like Products → Willingness to Pay Higher Out-of-Pocket Expenses (H ₁₃)	.401	***
Hotel-like Services → Willingness to Pay Higher Out-of-Pocket Expenses (H ₁₄)	.704	.047

^aunstandardized estimates

***significant at $p < .001$

We then tested the effect sizes (using Cohen's f^2) of the additional direct relationships between the product and service-related hotel attributes and behavioral intentions in model B, to determine whether these added relationships added any significant explanatory power to the model. We found that the addition of these direct relationships did indeed explain higher variance in both behavioral intention variables: likelihood to choose (R^2 for model A = .291, R^2 for model B = .343, Cohen's f^2 = .0791, effect size = small) and willingness to pay higher out-of-pocket expenses (R^2 for model A = .297, R^2 for model B = .418, Cohen's f^2 = .2079, effect size = medium). Thus, based on these three nested model comparison procedures—chi-square difference test, assessment of path significance, and effect size testing—we conclude that alternative model B, developed based on the tenets of restorative servicescapes and cue utilization theory, is theoretically and empirically stronger in explaining the outcome constructs, and, thus, in explaining the dynamics of hotel-like restorative servicescapes. In stage 2, we examine the moderating effect of patients' health states on the relationships in this stronger model B.

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3 618 *Stage 2 Results: Moderating Effect of Patients' Health States*

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5 619 *K-means Clustering*

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8 620 We used the k-means clustering algorithm to divide the overall sample of patients into two
9
10 621 groups, on the basis of four variables pertaining to their health status: the number of times
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12 622 patients had been hospitalized in the last six months, the total number of days for which they had
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14 623 been hospitalized, their perceived physical health (at the time of the survey), and their perceived
15
16 624 mental health (at the time of the survey). Given that the respondents in our sample had been
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19 625 hospitalized in the six months prior to answering the survey, it was reasonable to accept that
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21 626 there had been no drastic change in their physical and mental health between the time of their
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23 627 hospitalization and the time they took the survey. Studies in the medical field support the use of
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25 628 such an omnibus measure of health status (Agha, Lofgren, VanRuiswyk, & Layde, 2000; Lorig
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27 629 et al., 2001).

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31 630 Cluster 1 comprised 304 respondents. These respondents had, on average, been
32
33 631 hospitalized twice in the six months prior to taking the survey, spent between six and ten nights
34
35 632 in hospital, and perceived their physical and mental health (3.10 and 4.24 respectively) to be
36
37 633 significantly lower than respondents in cluster 2. We thus labeled this cluster *less healthy*
38
39 634 *patients*. Cluster 2 comprised 223 respondents who had, on average, been hospitalized only once
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41 635 in the six months prior to taking the survey, spent between one and five nights in hospital, and
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43 636 perceived their physical and mental health (5.40 and 5.56 respectively) to be significantly higher
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45 637 than those in cluster 1. This cluster was thus labeled *more healthy patients*. A one-way
46
47 638 MANOVA and subsequent one-way ANOVAs confirmed that the differences between the two
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49 639 clusters on each of the four health status variables were statistically significant, thus validating
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51 640 the efficacy of the clustering procedure.
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3 641 *Multi-group SEM Results: Model B*
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5 642 The multi-group structural equation model (model B) resulted in the following measures of fit:
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7 643 $\chi^2/df = 2.45$; CFI = .924; IFI = .925; RMSEA = .053, indicating acceptable fit of the model to
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10 644 the data. The parameter estimates for the multi-group structural model are presented in Table 6.
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12 645 Interestingly, while for the less healthy patients, both product and service attributes contributed
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14 646 to higher well-being, for the more healthy patients, only the dimension of hotel-like services
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16 647 resulted in significantly higher well-being, while the product attributes did not. Also, for less
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19 648 healthy patients, a higher level of perceived well-being resulted in a significantly higher
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21 649 willingness to pay higher out-of-pocket expenses, while this was not the case for the more
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23 650 healthy patients. In terms of the additional direct relationships between hotel-like products and
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25 651 services and behavioral intentions, hotel-like products do not have a significant impact on
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28 652 patients' likelihood to choose a hotel-like hospital room in both groups of patients, a result that is
29
30 653 consistent with the overall sample results for model B presented in Table 5. Finally, for the less
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32 654 healthy patients, hotel-like services also significantly impact their willingness to pay higher out-
33
34 655 of-pocket expenses, while this was not the case for more healthy patients. In sum, we found three
35
36 656 more relationships to be significant in the less healthy patients group, indicating that this group
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38 657 may be more likely to derive greater restorative benefits from hotel-like hospital rooms, which
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41 658 may also make them more likely to pay higher out-of-pocket expenses for such rooms.
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663 **Table 6.**
 664 **Multi-group SEM Results (Model B): Less Healthy vs. More Healthy Patients.**
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Structural Path	Less Healthy Patients		More Healthy Patients		Pairwise Parameter Comparison (Z-score)
	Estimate ^a	p-value	Estimate ^a	p-value	
Hotel-like Products → Perceived Well-being (H ₆)	.152	.038	.131	.317	-0.140
Hotel-like Services → Perceived Well-being (H ₇)	.969	.002	.687	.041	-0.617
Perceived Well-being → Likelihood to Choose Hotel-like Hospital Room (H ₈)	.361	***	.470	***	0.901
Perceived Well-being → Willingness to Pay Higher Out-of-pocket Expenses (H ₉)	.287	.029	.171	.182	0.633
Likelihood to Choose Hotel-like Hospital Room → Willingness to Pay Higher Out-of-Pocket Expenses (H ₁₀)	.297	.001	.219	.047	-0.549
Hotel-like Products → Likelihood to Choose Hotel-like Hospital Room (H ₁₅)	-.035	.661	-.246	.075	-1.317
Hotel-like Services → Likelihood to Choose Hotel-like Hospital Room (H ₁₆)	.986	.005	1.059	.006	0.141
Hotel-like Products → Willingness to Pay Higher Out-of-Pocket Expenses (H ₁₇)	.348	.004	.462	.020	0.487
Hotel-like Services → Willingness to Pay Higher Out-of-Pocket Expenses (H ₁₈)	.965	.047	.389	.452	-0.795

666 ^aunstandardized estimates

667 *** significant at p < .001

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3 669 *Between-Group Comparisons: Less Healthy vs. More Healthy Patients*
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5 670 In addition to evaluating the significance of the parameter estimates *within* the respective
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7 671 clusters, we used pairwise parameter comparisons to determine whether there were significant
8
9 672 differences *between* the less healthy and more healthy patients. However, prior to testing for
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11 673 between-cluster differences, we tested the model for measurement invariance i.e., we tested for
12
13 674 the configural and metric invariance of the multiple-group model created by patients' health
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15 675 states (less health and more healthy) as the moderator. To test for configural invariance, two
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17 676 groups (in this case, less health and more healthy) are tested together and freely, and configural
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19 677 invariance is established if the resultant model for that moderator indicates acceptable fit to the
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21 678 data. To test for metric invariance, all the first-order factor loadings are constrained to be equal
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23 679 between groups. The fit of the resultant model is then compared with that of the configural
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25 680 model; the *lack* of a significant difference in chi-square establishes metric invariance. The
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27 681 multiple-group (CFA) model indicated an acceptable fit to the data ($\chi^2/df = 2.469$; CFI = .932;
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29 682 IFI = .932; RMSEA = .053), thus establishing configural invariance. The chi-square difference
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31 683 test between the configural and metric invariant models was not significant (χ^2 difference =
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33 684 12.76; $p = .47$), indicating that model is metric invariant i.e., there are no differences between the
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35 685 two cluster models at the measurement level. Thus, we proceeded to the next step of testing for
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37 686 structural differences.
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44 687 Interestingly, pairwise parameter comparisons indicated no significant differences
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46 688 between the less healthy and more healthy patients. Thus, even though less healthy patients
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48 689 group had three more significant relationships than in the case of the more healthy patients
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50 690 group, these differences were not statistically significant in terms of their magnitudes, indicating
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52 691 a structural invariance between the two clusters. Thus, we did not find support for any of the
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3 692 hypotheses comparing the two groups i.e., hypothesis 6-10 and hypotheses 15-18. We also
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5 693 conducted a one-way MANOVA to compare the means of the various components of the model
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7 694 between the less healthy and more groups. Means for hotel-like products, hotel-like services, and
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10 695 perceived well-being were calculated as the average score of the items used to measure each
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12 696 construct, while likelihood to choose and willingness to pay higher out-of-pocket expenses are
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14 697 single item measures. Results indicated that health states are not a significant factor in
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17 698 differentiating between the various components (Wilk's $\Lambda = 0.982$; $F = 1.952$; $p = .084$),
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19 699 supplementing the lack of support for hypotheses 6-10 and hypotheses 15-18. Overall, the results
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21 700 indicate that patients' health states, while providing a better explanation for the dynamics of
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23 701 hotel-like restorative servicescapes *within* the less healthy patients group, is a weak moderator of
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26 702 the relationships in the overall model.
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30 704 **Discussion**

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33 705 An increasingly competitive healthcare environment, stimulated by a pay for performance model
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35 706 of reimbursement to hospitals and physicians, has required healthcare institutions to recognize
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37 707 the patient as a customer (Sadler et al., 2008; Lee, 2011). The emphasis on patient-centered care
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40 708 that borrows heavily from a service quality perspective has put the patient experience at the
41
42 709 forefront of healthcare administrators' strategic priorities. Thus, building on Sues and Mody's
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44 710 (2017) Framework for Hospitality Healthscapes, which offers a redacted version of Hutton and
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47 711 Richardson's (1995) healthscapes framework to examine the infusion of hospitality elements into
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49 712 the healthcare environment, we developed and tested two alternative models for hotel-like
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51 713 restorative servicescapes that examine the impact of hotel-like products and services on patient
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54 714 well-being and subsequent behavioral outcomes. Our models leverage the theoretical
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3 715 mechanisms underlying the concept of restorative servicescapes and ART, whose manifestation
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5 716 in the healthcare context defines the EBD agenda; an agenda that extrapolates the emphasis of
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7 717 restoration from ART's focus on fatigue to the notion of well-being. In addition to the base
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9 718 model of hotel-like restorative servicescapes (model A), we also drew upon the tenets of cue
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11 719 utilization theory to propose an alternative, expanded model of hotel-like restorative
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13 720 servicescapes (model B), and compared these two models using a series of nested model
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15 721 comparison procedures.
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19 722 We found that the alternative, expanded model (model B), which was developed based on
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21 723 the tenets of ART/restorative servicescapes *and* cue utilization theory, provided a theoretically
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23 724 and empirically stronger explanation for the dynamics of hotel-like restorative servicescapes. Not
24
25 725 only do hotel-like products and services significantly enhance patient well-being, which, in turn,
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27 726 stimulates a desire to choose hotel-like hospital rooms over regular hospital rooms along with a
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29 727 willingness to pay more for such rooms, but also these product and service features directly
30
31 728 impact patients' behavioral intentions. Except for the relationship between hotel-like product
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33 729 attributes and likelihood to choose a hotel-like hospital room, the other three direct relationships
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35 730 suggested by cue utilization theory (services→ likelihood to choose; products→ willingness to
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37 731 pay higher; services→ willingness to pay higher) were all significant.
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42 732 For the overall sample, hotel-like services were significantly more important than product
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44 733 attributes, both in terms of their impact on perceived well-being, and also in terms of their mean
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46 734 importance levels. Hospitality-certified healthcare staff was the most important service feature
47
48 735 for patients, substantiating Steele et al.'s (2015) finding that patients want to be listened to,
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50 736 treated with respect, and communicated with effectively. **This attribute of high-touch customer**
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52 737 **interactions has also previously been found to have the strongest association with hospital**
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3 738 financial outcomes (Betts et al., 2016). From a product attribute standpoint, luxury bed linen was
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5 739 most important to patients. Given that in-patients are often restricted in their movement, and thus
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7 740 often bedridden for the duration of their stay, the provision of luxury bed linen (high thread
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9 741 count, luxurious fabrics like Egyptian cotton, etc.) can be a simple touch to enhance their well-
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11 742 being, followed by the addition of color to the hospital room—in the form of colorful walls and
12
13 743 mood lighting. Such product additions can go a long way in moving a hospital room beyond its
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15 744 characteristic sterile feel to an environment that fosters health and recovery throughout the
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17 745 various stages of the treatment process (Lee et al., 2013).

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21 746 When moderated by patients' health states, we found the exact same pattern of results to
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23 747 the overall sample for less healthy patients, while three of these relationships (products→ well-
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25 748 being; well-being→ willingness to pay higher, and services→ willingness to pay higher) were
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27 749 not significant for the more healthy patients group. While none of the relationships were
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29 750 significantly different *between* the two groups of patients, the additional significant relationships
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31 751 *within* the less healthy group indicate that these patients are more likely to derive greater utility
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33 752 from hotel-like restorative servicescapes, which, in turn, is more likely to lead a willingness to
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35 753 pay more for hotel-like hospital rooms. These findings indicate that less healthy patients likely
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37 754 have a greater need for more restorative servicescapes, and are more willing to pay more to have
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39 755 their needs met. Thus, while there were no appreciable differences between the less healthy and
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41 756 more healthy patients, when viewed in context of the results of the overall model (model B), one
42
43 757 can conclude that both hotel-like products and services in hospitals are key drivers of patient
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45 758 well-being and can create a preference for hospitals that offer such rooms, subsequently
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47 759 improving their revenues and profitability (Suess & Mody, 2017). The findings of the study have
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49 760 important theoretical and practical implications.

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3 761 *Theoretical Implications*
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5 762 In testing models that examine the impact of hotel-like products and services on patient well-
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7 763 being and subsequent behavioral outcomes, the present study answers Suess and Mody's (2017)
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9 764 call for an operationalization of the Framework for Hospitality Healthscapes. Specifically, while
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11 765 these and other authors (Hollis & Verma, 2015; Suess & Mody, 2018b; Swan et al., 2003; Wu et
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13 766 al., 2013) have alluded to the dichotomy of the product and service attributes that comprise the
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15 767 infusion of hospitality into the healthcare environment, the present study is the first to
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17 768 empirically assess the impact of these dimensions on patient well-being. In so doing, the study
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19 769 theoretically and operationally develops Hutton and Richardson's (1995) original healthscapes
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21 770 model, the discussions and applications of which have mainly been conceptual, descriptive, or
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23 771 case-based, as evidenced in variety of studies that have explored the physical design/product and
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25 772 service/social attribute manifestations of the concept of hospitality meets healthcare across a
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27 773 variety of settings (e.g., Chrysikou, Tziraki, & Buhalis, 2018; Zhou, Yu, Wu, Wall, & Pearce,
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29 774 2018).

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31 775 Relatedly, the study makes a significant contribution to research on patient well-being,
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33 776 beyond the contemporary healthcare industry focus on patient satisfaction. Well-being is a
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35 777 construct known to permeate a variety of life domains, and health and healthcare is no exception
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37 778 (Rahtz, Sirgy, & Lee, 2004; Sirgy, 2001). Indeed, as Verma (2010) points out "even though the
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39 779 overwhelming reason to visit a health care facility is to receive professional advice and medical
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41 780 care.... one can also argue, for instance, that a person's health and well-being depend on care
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43 781 above and beyond clinical procedures" (p. 473). The quality of healthcare one receives is shown
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45 782 to play an important role in tackling disease and contributing to individual well-being, health and
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47 783 prosperity (Sirgy, 2012). Using subjective well-being as a measure of quality in healthcare (Lee
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3 784 et al., 2013), our research advances the EBD research agenda, addressing the need to develop
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5 785 models of health that expand the focus of healthcare design to beyond clinical outcomes
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7 786 (McCullough, 2009; Ulrich et al., 2008). The study also contributes to the relatively young
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10 787 research paradigm of transformative service research (TSR), an integration of consumer and
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12 788 service research that focuses on creating positive changes and improvements in the well-being,
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14 789 quality of life, and health outcomes of individuals, communities, and ecosystems (Rosenbaum,
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17 790 2015). Specifically, within the literature on restorative environments, which draws upon ART,
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19 791 we extend the concept of restorative servicescapes (Rosenbaum, 2009) by demonstrating the
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21 792 relevance of cue utilization theory. Beyond the mediating well-being benefits provided by hotel-
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23 793 like restorative servicescapes, as suggested by servicescape theory, these product and service-
24
25 794 related cues have an important direct impact on key business outcomes for healthcare institutions
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27
28 795 i.e., patients being more likely to choose and pay more for hotel-like hospital rooms. Moreover,
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30 796 the findings have significant implications outside academia and for consumer (patient) welfare,
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32 797 thus fulfilling some of the prerequisites for TSR.
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37 799 *Practical Implications*

39
40 800 Sirgy, Lee, and Yu (2011) have contended that consumer sovereignty in healthcare is more
41
42 801 fiction than fact, whereby healthcare consumers and firms lack the ability, motivation, and
43
44 802 opportunity to choose and provide (respectively) healthcare products that maximize consumer
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46 803 well-being. However, more recent evidence of the hotel-like products and services that
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48 804 healthcare firms are offering patients, as well as an increasing interest in the media (“Medical
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50 805 facility operates like luxury hotel,” 2014; Weed, 2016) and in academia on the nature and
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52 806 implications of these offerings, would suggest that a libertarian approach that capitalizes on well-
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3 807 being marketing as an ethical business philosophy can readily be adapted to healthcare settings
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5 808 (Sirgy & Lee, 2008).
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7
8 809 First, the findings urge healthcare administrators to incorporate both the product and
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10 810 service components of hospitality in healthcare. Hospitals do not need to design lavish
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12 811 environments at the expense of a guest-centric service culture (Pizam, 2015); rather, our findings
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14 812 emphasize the need for practical product and service design features that complement each other
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16 813 to *tangibilize the intangible* (Pizam, 2015) and thus create a better patient experience. In fact,
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18 814 given that hotel-like service attributes were more important to patients than products, enhancing
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20 815 the level of service provided may be a better starting point, since it can be incorporated into
21
22 816 existing healthcare facilities without the need for renovation per se. However, enhancing the
23
24 817 patient experience through service is not a straightforward, overnight process and cannot be
25
26 818 mechanically applied; departments must to provide the necessary training and interventions for
27
28 819 employees to develop and execute service skills that foster better quality care for the patient
29
30 820 (Sirgy & Jackson, 2015; Steele et al., 2015). This process also requires a strong understanding of
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32 821 and commitment to service excellence and hospitality by top management (Breiter, Rompf,
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34 822 Aiello, & Severt, 2010), and employee buy-in and engagement towards idea generation and
35
36 823 service innovation in healthcare settings (Mu, Bossink, & Vinig, 2018). In this regard, healthcare
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38 824 institutions would be well-served by leveraging expertise from the hospitality industry through
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40 825 consulting partnerships (such as that between restaurateur Danny Meyer's Union Square
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42 826 Hospitality Group and New York city hospitals) and and/or hiring employees with the know-how
43
44 827 to create a patient-focused service culture (such as former Ritz Carlton executive Gerard van
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46 828 Grinsven being hired as president and CEO of the Henry Ford Henry Ford West Bloomfield
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48 829 Hospital in Michigan, and subsequently of the Cancer Treatment Centers of America). There is
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3 830 clear evidence to suggest that the cross-discipline field—whereby hospitals are hiring individuals
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5 831 from service-oriented backgrounds to serve as directors of patient experience and/or customer
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7 832 service—is growing, “as hospitals face greater competition amid broader shifts to value-based
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9 833 care” (West, 2018).

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11
12 834 Second, healthcare institutions can harness the communicative power of the concept of
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14 835 hospitality meets healthcare to portray the hospital’s image to existing and potential patients. In
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16 836 light of our findings pertaining to the direct impact of product and service attributes on patients’
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18 837 behavioral intentions as per cue utilization theory, these attributes can serve as effective signals
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20 838 of a hospital’s quality and level of care, beyond the quality of the medical staff and other medical
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22 839 infrastructure. Thus, in addition to capitalizing on well-being marketing to communicate the
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24 840 restorative benefits of hotel-like restorative servicescapes, hospitals can use these servicescape
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26 841 elements to signal experience-related benefits, and thus leverage experiential marketing as is
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28 842 done in the hotel industry. In particular, given their greater influence on behavioral intentions
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30 843 than the product-related attributes, the servicescape’s service-related attributes are likely to send
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32 844 a stronger communicative signal to patients, in particular less healthy patients (those with
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34 845 potentially more serious illnesses). Also, since less healthy patients derived a significant level of
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36 846 well-being from both hotel-like products and services, and that this well-being translates into a
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38 847 greater willingness to pay higher out-of-pocket expenses, the communicative power of hotel-like
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40 848 restorative servicescapes can be better targeted to attract such (less healthy) patients to the
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42 849 facility.

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45 850 That the incorporation of hotel-like products and services enhances patient well-being
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47 851 can be used not only to attract patients to the facility, but also to *upsell* prospective patients to
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49 852 hotel-like hospital rooms. While some in the industry are critical of the use of such marketing
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3 853 and revenue enhancement strategies, there is a case to be made that enhanced care for the
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5 854 relatively affluent can subsidize and thus ensure continued access to safety-net services for those
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8 855 who cannot afford it (Goldman, 2016). This argument is no more contentious than the recent
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10 856 practice of concierge medicine, in which more “elite” patients pay a retainer for quicker access to
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12 857 medical care, based on a rational economics paradigm , which also increases healthcare
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15 858 providers’ incomes (Gavirneni & Kulkarni, 2014). That the patients in our study demonstrated an
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17 859 inclination to pay more for hotel-like hospital rooms and that this variable is significantly
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19 860 correlated with income (Spearman’s $\rho = 0.187$, $p < .001$) makes a compelling case for such an
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21 861 argument. When we examine consumer demand for such offerings in conjunction with the fact
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23 862 that enhancements to the servicescape involving soft attributes need not be financially
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26 863 burdensome, it is reasonable to conclude that hospitals that do not adopt such enhancements are
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28 864 likely to be left behind in an increasingly competitive, patient experience-oriented healthcare
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31 865 environment.

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34 35 867 *Limitations and Future Research*

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37 868 The study has certain limitations, which, in turn, present opportunities for future research. First,
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39 869 the list of hotel-like products and services that we tested is by no means exhaustive. We only
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41
42 870 included what we call soft EBD attributes that can make hospitals more hotel-like. These design
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45 871 renovations are focused on the patient experience in the hospital room, as opposed to the hospital
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47 872 facility at large. They also do not require hospitals to incur extensive capital expenditures or
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49 873 physical renovations as do the hard attributes, a factor that precludes their pragmatic relevance to
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51 874 a large number of existing hospitals across the country. Future research must explore patient
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54 875 preference for soft attributes outside the hospital room—such as a piano player in the hospital
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3 876 lobby, as well as hard attributes inside the room—such as marble bathrooms and rooms with
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5 877 views of nature, and outside—such as libraries and lounges. Moreover, beyond the patient, an
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7 878 emphasis on understanding family and/or caregiver preferences for soft and hard hotel-like
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10 879 product and service attributes, such as double/adjacent rooms, hotel-quality family dining or
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12 880 entertainment features such as movie theatres can inform the development of the hospital of the
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15 881 future that emphasizes total customer welfare.

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17 882 Second, we did not conduct the study in the hospital environment, rather with patients
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19 883 who had been hospitalized in the six months prior to taking the survey. An in-situ understanding
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21 884 of hospitality meets healthcare would allow researchers to incorporate other important clinical
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23 885 and non-clinical outcomes such as perceived pain, recovery time, stress levels, emotions and
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25 886 other feelings (comfort, privacy, feeling at home, etc.), and satisfaction, among others, which
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27 887 were not explored in the current hypothetical scenario. Third, while respondents in the study
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30 888 stayed in a hospital at least one night in the previous six months, we were unable to moderate the
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33 889 results across patients in different departments and/or for different types of
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35 890 treatments/procedures (e.g., Klaus, 2018). Fourth, future research must explore the role of
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37 891 demographics in patient-based models (e.g., El-Manstrly & Rosenbaum, 2018), given that these
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39 892 can often help explain the perspectives of under-researched consumers and minorities
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42 893 (Rosenbaum, 2018). Relatedly, a non-Western and developing world perspective to the patient
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44 894 experience is sorely missing from extant research, despite the significant strides made by
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46 895 countries like India, UAE, Turkey, and Morocco, among others in the provision of hospitality-
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48 896 oriented healthcare. Future studies should emphasize data collection at hospitals with hotel-like
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51 897 features in these and other countries, to validate some of present study's findings. In the
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54 898 meantime, we hope that the results of this formative study on the dynamics of hotel-like

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3 899 restorative servicescapes encourage other researchers to fill gaps in theory, empirical results, and
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5 900 practice.
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10 902 **References**

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