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Influence of Bathroom Cladding Materials on Users' Perceived Well-Being

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Abstract

In recent decades, bathroom design has undergone significant changes driven by technological advances, aesthetic trends, and social transformations. Despite their relevance to daily routines and quality of life, bathrooms remain underexplored with regard to how cladding materials influence users' psychological experience. This study aims to analyze the effects of different bathroom cladding materials on perception, emotional response, and purchase intention. An online experiment was conducted using a single-factor experimental design with five types of cladding materials (ceramic, vinyl, wood, microcement, and natural stone). A total of 58 participants evaluated five virtual bathroom stimuli through self-report measures assessing perceived well-being, perceived stress, perceived functionality, perceived aesthetic preference, perceived cost, emotional valence, and purchase intention. Data were analyzed using nonparametric statistical tests. The results revealed significant differences across all perceptual dimensions depending on the cladding material. Wood and natural stone were associated with higher levels of perceived well-being and more pleasant emotional responses, whereas microcement was linked to higher perceived stress and lower aesthetic evaluations. In addition, affective variables—particularly aesthetic preference—emerged as the strongest predictors of purchase intention. These findings highlight the importance of bathroom materiality in shaping emotional experience and decision-making processes, and emphasize the role of cladding selection in promoting psychological well-being within domestic environments.

Keywords: materiality; bathrooms; psychological well-being; environmental perception; neuroarchitecture; purchase intention; interior design

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1. Introduction

Bathroom design has undergone a significant transformation over recent decades, driven by technological advances, emerging aesthetic trends, and profound social changes that have redefined the role of these spaces in everyday life [1,2]. This evolution is particularly evident in the selection of materials, claddings, and finishes, which not only determine the bathroom's functionality and durability but also shape users' daily interactions with their immediate environment. However, despite well-established evidence that the built environment exerts a direct influence on health and overall well-being [3–5], the bathroom remains one of the least explored residential spaces in terms of its specific effects on occupants, especially when compared with the extensive research devoted to settings such

as residential buildings more broadly, hospitals, or offices [6,7]. This gap in the scientific literature is partly attributable to the traditional perception of the bathroom as a secondary space associated with brief occupancy, where considerations of environmental exposure and sensory experience have historically been relegated to a secondary role.

Nevertheless, a growing body of evidence from studies on health and housing conditions indicates that factors such as the quality of finishes, bathroom design and functionality, and moisture accumulation can have notable repercussions on residents' psychological well-being, either fostering or inhibiting states of relaxation and emotional balance [3,8]. Moreover, contemporary trends in residential design—particularly the integration of bathrooms with bedrooms in suite-type layouts—amplify the relevance of these spaces by facilitating the transfer of moisture, volatile compounds, and other pollutants into areas of prolonged rest. This process has potential implications for indoor air quality and overall health [4,9–13]. In a context where individuals spend the majority of their time indoors, and a substantial portion of that time is devoted to personal care and hygiene routines, the bathroom emerges as a key site of repeated environmental exposure. Its material configuration therefore warrants closer attention in order to mitigate risks and enhance potential benefits.

The connection between the bathroom and human experience is not a recent discovery but rather a concern rooted in longstanding cultural traditions. In his essay *In Praise of Shadows* (1933) [14], for instance, Jun'ichirō Tanizaki reflects on how the interplay of natural materials, subtle darkness, and diffused light defines the atmosphere of the traditional Japanese bathroom, in contrast to the perceived sterility and coldness of many modern Western bathrooms. This distinction has been revisited in contemporary debates on architectural aesthetics and sensory perception [7,14]. Such early reflections anticipated current findings in neuroarchitecture, which position architecture as a sensory agent capable of modulating emotions, perceptions, and physiological responses in the human body [5,15]. From this perspective, the bathroom transcends its basic hygienic function to become an intimate sanctuary for pause and temporary disengagement from the external world [16]. This sense of intimacy is intensified by the direct and vulnerable exposure of the unclothed body, which comes into immediate contact with the tactile properties of materials, temperature variations, humidity levels, rough or smooth textures, and the ambient odors inherent to the space. Each of these stimuli contributes to shaping a holistic sensory experience that may induce calming and restorative sensations or, conversely, generate discomfort and stress if such interactions are not adequately considered in design.

Within this broader context, cladding materials acquire a dual and complementary relevance, acting both as mediators of physical health and as configurators of psychological health. From a physical health perspective, these materials not only define the bathroom's aesthetic character but also determine indoor air quality and everyday exposure to chemical and biological contaminants—often without thorough evaluation of their medium- and long-term impacts during the design process [7,17]. Numerous epidemiological studies have established a clear association between recent bathroom renovations—such as the application of fresh paints, installation of PVC flooring, or the incorporation of particleboard—and increased incidence of respiratory symptoms, allergies, eczema, or even pneumonia, particularly among vulnerable pediatric populations [18–21]. These adverse effects are primarily attributed to the release of volatile and semi-volatile organic compounds (VOCs and SVOCs), including substances such as formaldehyde and phthalates, emitted by paints, varnishes, engineered wood furniture, and vinyl coverings. These compounds can persist in the humid bathroom environment and migrate into adjacent spaces [22–25]. Formaldehyde, classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC), has been specifically linked to mucosal irritation, asthma exacerbation,

and increased cancer risk under prolonged exposure, while phthalates—commonly used in flexible plastics—have been associated with childhood asthma, neurological alterations, metabolic disruptions, and adverse reproductive effects [22,23,25].

In addition, the inherent humidity of bathrooms creates favorable conditions for mold growth and the accumulation of biological contaminants in household dust, which have been linked to a higher prevalence of chronic cough, dyspnea, respiratory infections, and generalized allergic symptoms [26–28]. Susceptibility to these fungal issues varies by material: cellulosic derivatives such as wallpaper, gypsum board, or particleboard are particularly problematic due to their moisture absorption, whereas carefully selected solid woods from resistant species, treated with impermeable coatings, offer a safer and more durable alternative in humid environments [29–32]. Additional aggravating factors include moisture and dust retention in textiles or carpets, as well as the dispersion of microorganisms through aerosols generated by toilet flushing or shower use. Together, these factors underscore the importance of selecting non-porous, easy-to-clean, moisture-resistant materials, complemented by efficient ventilation systems and regular maintenance protocols to minimize contaminant loads [26,33,34].

In contrast, from a psychological health perspective, cladding materials exert a direct and profound influence on users' emotional and cognitive experiences, shaping the sensory atmosphere of the space in ways that extend beyond purely functional considerations. Neuroarchitectural research has extensively documented how the built environment modulates not only physical health but also cognitive and emotional processes, demonstrating that aspects such as spatial design, lighting, color, acoustics, and—most notably—the tactile and visual properties of materials can alter stress levels, mood states, sustained attention, and perceived subjective well-being [5,15,35–37]. In bathrooms, spatial size and form interact with the sensory qualities of claddings to evoke perceptions of warmth, safety, and comfort—such as those associated with soft textures and earthy tones—or, conversely, feelings of coldness, impersonality, and clinical sterility, as is often the case with smooth metallic surfaces or glossy plastics [38,39].

In recent years, particular attention has been paid to biologically derived materials, such as wood or bamboo, which are consistently associated with sensations of naturalness, warmth, and deep relaxation. These materials promote a connection with nature that reduces anxiety and enhances concentration, in contrast to highly industrialized materials such as synthetic plastics or exposed metals, which tend to evoke artificiality and emotional coldness [6,40]. Controlled experiments conducted in both real and virtually simulated environments confirm that the harmonious integration of materials with appropriate lighting and multisensory stimuli—such as natural scents or organic textures—can significantly reduce perceived stress and enhance emotional comfort. This effect is particularly valuable in intimate, frequently used spaces such as bathrooms, where the daily hygiene ritual becomes a moment of introspection and renewal [41].

Within this framework, the bathroom can be understood as a space in which materiality not only conditions environmental quality but also quietly constructs emotional climates that accompany everyday rituals of bodily care and exposure. The review of evidence regarding physical risks associated with cladding materials therefore serves as a starting point to delineate a more specific focus on the psychological and well-being dimensions linked to the bathroom's sensory experience. The primary objective of this study is to analyze how cladding materials used in bathrooms influence users' psychological health and well-being. Building on this general objective, the study seeks to identify which materials and sensory qualities contribute most significantly to creating environments perceived as comfortable, warm, and emotionally positive, thereby providing a more

comprehensive understanding of the role played by bathroom materiality in everyday experience and in the promotion of well-being.

2. Materials and Methods

To address the stated objective, an online experiment based on a survey instrument was conducted following a structured and well-defined procedure. In this study, a sample of participants evaluated their perceptions and purchase intentions in response to various stimuli, represented by bathrooms constructed with different materials. This involved the design of a single-factor experiment with five levels, which facilitated subsequent analysis of the collected data. The five key components of the methodological approach (Figure 1) are described in the following subsections.

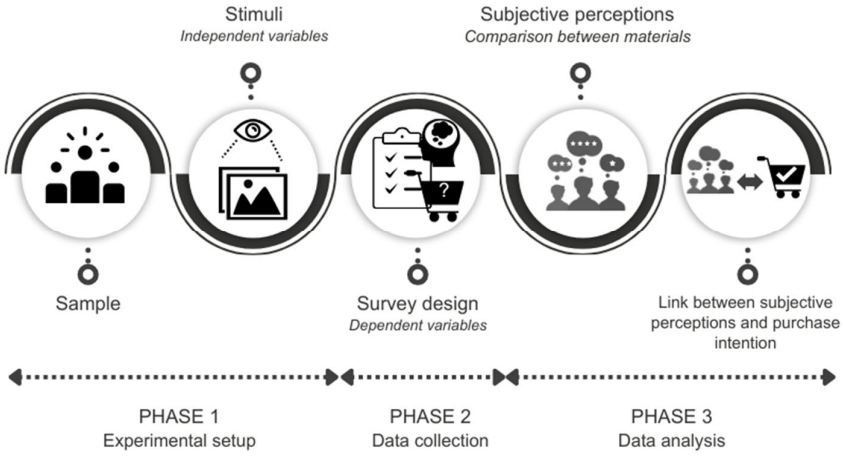


Figure 1. Schematic representation of the study procedure.

2.1. Participants

Initially, 60 responses to the questionnaire were collected. However, the final sample comprised 58 participants after excluding 2 incomplete cases, as incomplete responses may indicate insufficient attention, lack of engagement, or limited comprehension on the part of the respondent. Participants were recruited from the general population through social media platforms and professional networking portals. The study received ethical approval from the relevant Institutional Review Board (see Institutional Review Board Statement). All participants first read and provided informed consent and were informed that they could withdraw from the questionnaire at any time without penalty.

To adequately characterize the sample and contextualize the results, a range of relevant sociodemographic data were collected. The mean age of respondents was 39.02 years (SD = 15.33; min = 19; max = 61), with 75.0% of participants identifying as female. Regarding country of birth, 89.5% reported being born in Spain or Portugal, while 10.5% originated from Central or South American countries. In terms of place of residence, 89.5% indicated living in an urban area, and 10.5% in rural, coastal, or inland areas. With respect to household composition, the mean number of cohabitants was 3.35 (SD = 1.03), with the following distribution: single-person households (1.6%), two-person households (21.3%), three-person households (24.6%), four-person households (34.4%), and five-person households (11.5%).

Regarding dependents, the mean number was 1.00 (SD = 1.24). Specifically, 49.2% of respondents reported having no dependents, 15.3% reported one dependent, 20.3% reported two, 8.5% reported three, and 1.7% reported having four or five dependents. In addition, 17.1% of participants reported working in a profession related to the construction

sector. Finally, the mean bathroom size among respondents was 6.66 m^2 (SD = 2.81), with values ranging from 3 to 15 square meters.

2.2. Stimuli

All participants were presented with five visual stimuli consisting of bathrooms featuring different finishes. Each stimulus was displayed as a vertical image with dimensions of 1600 × 1800 pixels and a resolution of 72 dpi (Figure 2). All images depicted a rectangular bathroom layout equipped with a shower (3), a toilet (2), a vanity unit with washbasin (1), a mirror, and a large skylight located above the shower area, which served as the primary source of illumination. The sole difference among the stimuli was the type of cladding material used: ceramic, wood, natural stone, microcement, and vinyl. All stimuli shared the same spatial layout and bathroom fixtures in order to control the design-related variables. This was intended to ensure that as the cladding material was the only element varying across stimuli, the participants' evaluations were mainly driven by this aspect.



Figure 2. Set of the five stimuli used in the study.

To create the stimulus images, real bathroom interiors were used as references. A rectangular space measuring 4.00 m × 2.20 m was designed, incorporating all standard bathroom elements arranged according to Figure 3. The space was subsequently modeled in 3D using SketchUp 2025 software, and the V-Ray rendering engine was employed to apply the materials under study and generate five images from the same viewpoint, each differing only in materiality. Parameters related to lighting levels, atmospheric conditions, and material reflectance were consistently defined within the software to realistically simulate environmental conditions.

The selected cladding materials were applied to the floor, the shower walls, and the vanity countertop. Material selection was based on commercially available products commonly used in bathroom environments, prioritizing those with high market presence from representative companies in the sector. Specifically, the materials included ceramic from Living Ceramics (https://livingceramics.com/ accessed on 15 July 2025); wood and natural stone from Porcelanosa (https://www.porcelanosa.com/ accessed on 15 July 2025); microcement from Leroy Merlin (https://www.leroymerlin.es/ accessed on 15 July 2025); and vinyl cladding incorporating products from Leroy Merlin and American Decals (https://ameridecals.com/ accessed

on 15 July 2025). All remaining surfaces were finished in a neutral white color to avoid visual interference.

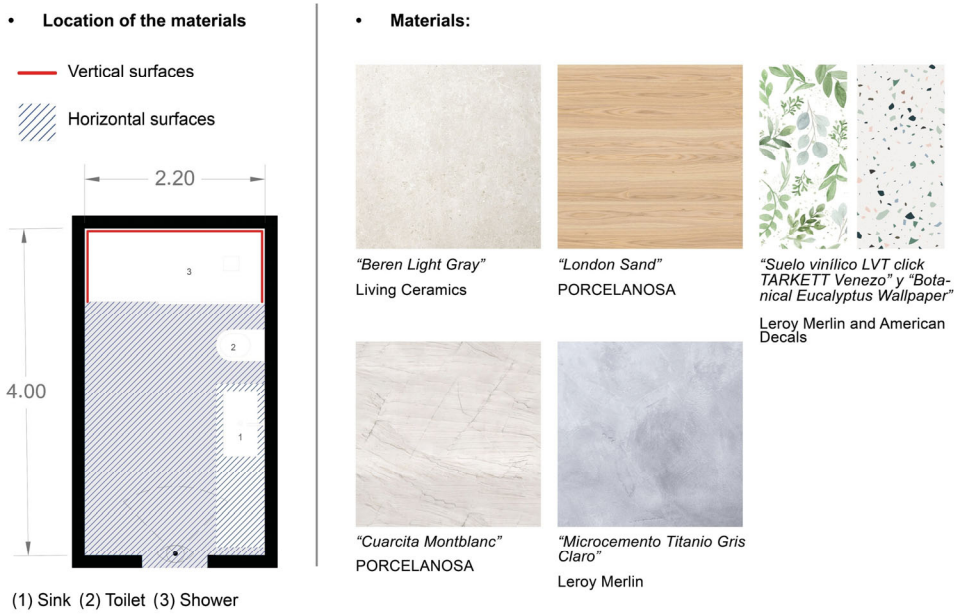


Figure 3. Floor plan of the presented space (**left**) and illustration of the cladding materials applied to the vertical and horizontal surfaces to generate the different stimuli under study (**right**).

Finally, the rendered images underwent post-production using Adobe Photoshop, during which labels indicating the material type of each bathroom configuration were added.

2.3. Survey Structure

The survey was designed as a structured online questionnaire composed of several sequential sections. The first page presented an informed consent statement explaining the purpose of the study, the voluntary nature of participation, and the anonymous treatment of the collected data. Participants were required to confirm their acceptance before proceeding to the questionnaire.

Following the consent page, participants were presented with a series of stimuli. Each stimulus was displayed on a separate page, together with a set of questions assessing the participants' perceptions of the space. This structure allowed the respondents to view the corresponding bathroom image while answering the perception-related questions.

Finally, the survey concluded with a section collecting basic sociodemographic information from the participants, including variables relevant for the characterization of the sample.

2.4. Perception and Purchase Intention

To assess the users' subjective perceptions and purchase intention in response to the different stimuli, seven key variables were considered: perceived well-being, perceived stress, perceived functionality, aesthetic preference, perceived cost, emotional response, and purchase intention. These variables were measured using self-report items in which the participants indicated their level of agreement or disagreement with a series of statements. Specifically, participants were asked to respond to the following prompts: "Overall, this bathroom: generates well-being/generates stress/is functional/I like it/is expensive or high-priced/I would choose it for my home". Responses were recorded using a 7-point Likert scale, with endpoints ranging from "strongly disagree" to "strongly agree". As the aim of the study was to capture immediate subjective perceptions elicited by visual stimuli, these constructs were measured using single-item perceptual evaluations rather than multi-item psychological scales. Therefore, the measures should be interpreted as the participants'

perceived well-being and perceived stress in response to the presented environments, rather than as comprehensive assessments of psychological well-being or stress.

In addition, emotional response was assessed through emotional valence, defined as the dimension reflecting the degree of pleasure or displeasure experienced when observing an environment [42]. Emotional valence was measured using a 9-point continuous scale ranging from 0 to 9, following the Self-Assessment Manikin (SAM) questionnaire developed by Bradley and Lang [43], in which higher values indicate pleasant (positive) emotions and lower values indicate unpleasant (negative) emotions.

2.5. Data Analysis

To address the stated objectives, statistical analyses were conducted using IBM SPSS Statistics (version 27). First, the normality of the dependent variables was assessed using the Shapiro–Wilk test. The results indicated that most variables did not follow a normal distribution ($p < 0.05$). In addition, given that the measures were derived from Likert-type scales, nonparametric tests were selected, as they are more appropriate for the analysis of ordinal data and non-normally distributed variables.

To compare the ratings assigned to the different types of cladding materials (ceramic, vinyl, wood, microcement, and natural stone) across several perceptual dimensions—namely perceived functionality, perceived cost, aesthetic liking, well-being, stress, and affective valence—the Friedman test (Friedman's two-way analysis of variance by ranks) for related samples was applied. This test made it possible to identify significant differences in the participants' perceptions as a function of the cladding material evaluated. Effect sizes were estimated using Kendall's W coefficient to assess the magnitude of the observed differences [44].

When the Friedman test yielded significant results, post hoc pairwise comparisons were performed with Bonferroni adjustment to determine between which cladding types statistically significant differences were present, thereby controlling for the increase in Type I errors associated with multiple comparisons.

Finally, to explore the relationships between perceptual dimensions and purchase intention for each type of cladding material, bivariate correlation analyses were conducted using Spearman's rho coefficient, which is appropriate for ordinal and non-normally distributed variables. These correlations were computed separately for each material. Given the number of correlations performed, an adjustment for multiple comparisons was applied to control Type I errors, ensuring a more conservative interpretation of the results.

3. Results

To address the stated objective, comparative analyses of subjective perceptions across the different bathroom types were first conducted. Subsequently, the relationships between these perceptions and purchase intention were examined.

3.1. Comparative Analysis

The Friedman test for related samples revealed statistically significant differences among the evaluated conditions across all perceptual dimensions (Table 1): perceived well-being ($\chi^2(4) = 40.402$, $p < 0.001$, $W = 0.171$); perceived stress ($\chi^2(4) = 40.093$, $p < 0.001$, $W = 0.180$); perceived functionality ($\chi^2(4) = 14.882$, $p = 0.005$, $W = 0.055$); perceived aesthetics preference ($\chi^2(4) = 48.546$, $p < 0.001$, $W = 0.207$); perceived cost ($\chi^2(4) = 45.289$, $p < 0.001$, $W = 0.184$); and emotion ($\chi^2(4) = 24.501$, $p < 0.001$, $W = 0.11$). These findings indicate that the type of cladding material significantly influences perceived well-being, perceived stress, perceived bathroom functionality, aesthetic preference (as indicated by the item "I like it"), subjective cost perception, and the emotional response elicited by the spaces.

Overall, the data suggest that natural stone and wood claddings generated a greater sense of well-being (Figure 4a) and more pleasant emotional responses (Figure 4f) compared with microcement. Wood also appeared to be perceived as more functional (Figure 4c). In contrast, materials such as microcement were associated with higher levels of perceived stress (Figure 4b) and were rated as less aesthetically appealing (Figure 4d) than other types of finishes. Finally, microcement, together with vinyl, was perceived as less expensive (Figure 4e).

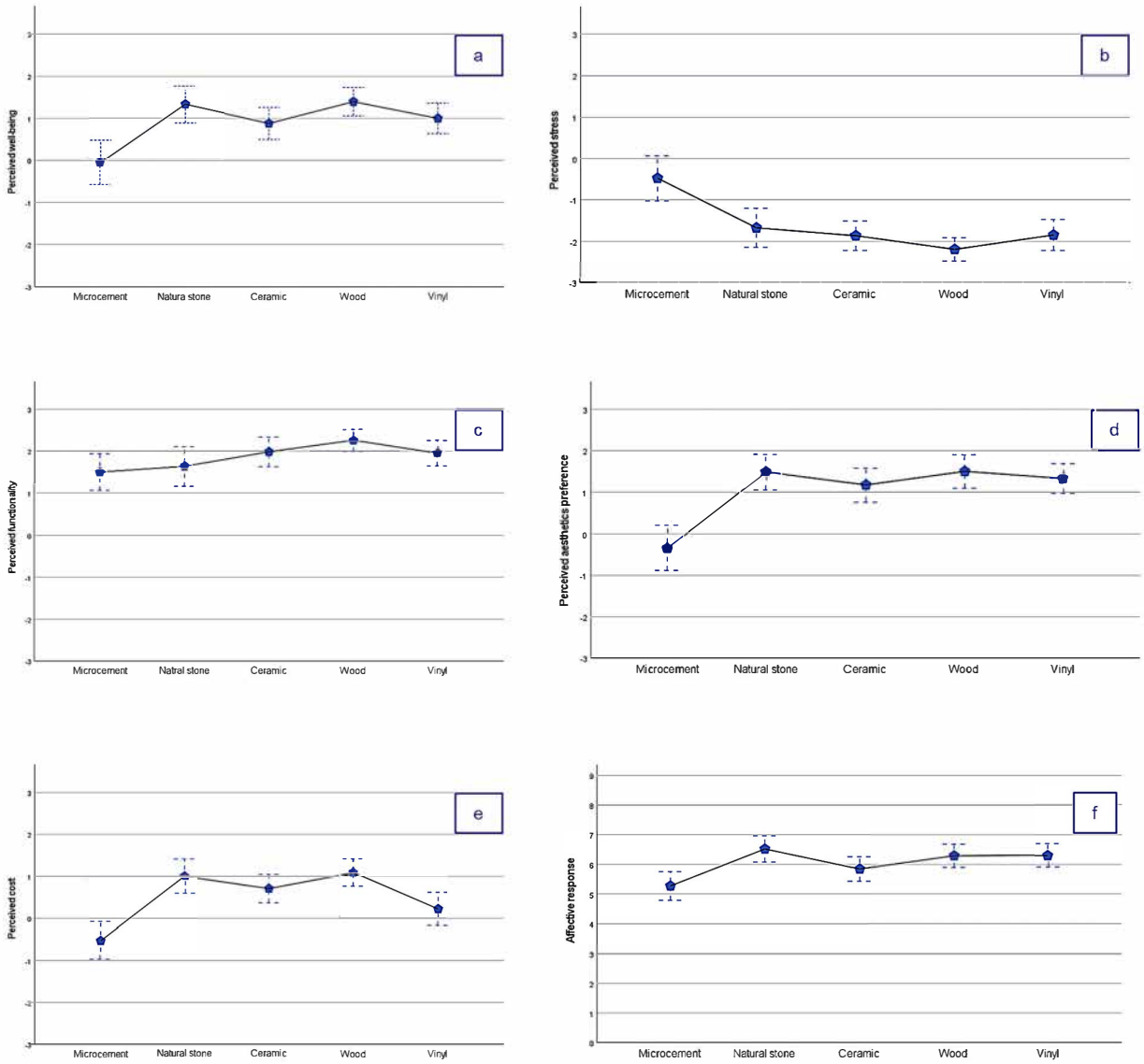


Figure 4. Mean scores for (**a**) well-being, (**b**) stress, (**c**) functionality, (**d**) aesthetic preference, (**e**) perceived cost, and (**f**) emotional response by cladding material type.

Bonferroni-corrected pairwise comparisons showed that microcement differed significantly from natural stone and wood, as it elicited less pleasant emotions ($p = 0.002$; $p = 0.033$), was perceived as less aesthetic ($p = 0.001$ in both comparisons), generated lower subjective well-being ($p = 0.001$ in both cases), and was perceived as cheaper ($p < 0.001$). In addition, microcement was associated with higher perceived stress than natural stone ($p = 0.006$). Microcement also differed from vinyl and ceramic, as it generated higher perceived stress ($p = 0.007$ in both cases) and lower aesthetic ratings ($p < 0.001$; $p = 0.009$, respectively). Furthermore, it elicited significantly lower well-being than vinyl ($p = 0.040$) and was perceived as cheaper than ceramic ($p = 0.015$).

Table 1. Median (Md) and mean ranks (MRs) of the perceptual dimensions by type of cladding materials.

	Md (MR)				
	Microcement	**Natural Stone**	**Ceramic**	**Wood**	**Vinyl**
Perceived functionality	2 (2.58)	2.5 (2.92)	2 (3.14)	3 (3.35)	2 (3.01)
Cost	0 (2.15)	1 (3.53)	0 (3.08)	1 (3.45)	0 (2.79)
Perceived aesthetic preference	0 (1.96)	2 (3.44)	1 (2.93)	2 (3.49)	1.5 (3.18)
Perceived well-being	0 (2.17)	1.5 (3.53)	0.5 (2.81)	1 (3.47)	0.5 (3.02)
Perceived stress	0 (3.88)	−2 (2.87)	−2 (2.89)	−3 (2.48)	−2.5 (2.88)
Affective response	5 (2.41)	7 (3.51)	6 (2.6)	6 (3.27)	6 (3.22)

Natural stone, in turn, was perceived as significantly more stressful than vinyl ($p = 0.006$) and wood ($p < 0.001$), and it elicited more positive emotional responses than ceramic ($p = 0.020$). With regard to perceived functionality, no statistically significant differences were observed among any of the evaluated materials (all adjusted p values > 0.05). Therefore, although the overall analysis suggested some variation in functional perception, no clear differences were identified between specific cladding materials.

3.2. Relationship Analysis

To further examine the factors influencing purchase intention for the different cladding materials, bivariate Spearman correlations were calculated between purchase intention and a set of perceptual variables (Table 2).

Table 2. Spearman correlations between perceptual variables and purchase intention by cladding material type.

	Microcement	**Natural Stone**	**Ceramic**	**Wood**	**Vinyl**
Perceived functionality	0.215 0.104	0.464 ** 0.000	0.319 ** 0.002	0.494 ** 0.000	0.380 ** 0.001
Cost	0.430 ** 0.001	0.027 0.843	0.048 0.648	0.226 * 0.042	0.160 0.184
Perceived aesthetic preference	0.813 ** 0.000	0.841 ** 0.000	0.754 ** 0.000	0.827 ** 0.000	0.830 ** 0.000
Perceived well-being	0.707 ** 0.000	0.816 ** 0.000	0.649 ** 0.000	0.632 ** 0.000	0.693 ** 0.000
Perceived stress	−0.361 ** 0.005	−0.462 ** 0.000	−0.557 ** 0.000	−0.495 ** 0.000	−0.447 ** 0.000
Affective response	0.512 ** 0.000	0.547 ** 0.000	0.705 ** 0.000	0.611 ** 0.000	0.662 ** 0.000

Note. Spearman's ρ coefficients are reported. ** $p < 0.01$; * $p < 0.05$.

The results revealed a remarkably consistent pattern in the way perceptions relate to purchase intention across the five cladding types analyzed. These perceptual variables can be grouped into two broad categories: on the one hand, variables of a more rational nature, such as perceived functionality and perceived cost; and on the other hand, variables of a more personal or affective nature, including aesthetic liking, perceived well-being, perceived stress, and overall emotional valence.

Across all materials, affective variables showed positive and statistically significant correlations with purchase intention. In particular, aesthetic perception emerged as the strongest predictor, with consistently high and significant correlation coefficients for all

materials ($\rho > 0.754$, $p < 0.001$ in all cases). Perceived well-being and emotional valence were also positively associated with purchase intention, whereas perceived stress showed a significant negative correlation, indicating that higher levels of stress elicited by a material are associated with lower purchase intention.

In contrast, variables of a more rational nature exhibited a less uniform pattern. Perceived functionality was positively related to purchase intention for all cladding materials except microcement, for which the correlation did not reach statistical significance ($\rho = 0.215$, $p = 0.104$). Moreover, the strength of these correlations was considerably lower than that observed for affective variables ($\rho > 0.494$, $p < 0.002$ in all significant cases). Perceived cost, in turn, showed little association with purchase intention. For most materials, no significant correlations were found, with microcement and wood being the only exceptions, displaying weak but statistically significant correlations ($\rho = 0.430$, $p < 0.001$ and $\rho = 0.226$, $p = 0.042$, respectively).

4. Discussion

This study provides empirical evidence on perception and purchase intention associated with cladding materials in domestic spaces that have received limited scholarly attention, such as bathrooms, demonstrating how materiality shapes emotional experience and environmental appraisal.

First, with regard to subjective perception, the results show that different cladding materials generate distinct patterns of well-being, stress, aesthetic liking, and emotional valence, confirming that bathroom materiality directly influences users' psychological experience [3,5]. The presence of systematic differences between materials—particularly the contrast between microcement and materials such as wood or natural stone—suggests that bathroom materiality is not a neutral feature, but rather a factor capable of modulating everyday experience, even in spaces traditionally regarded as secondary within the home [4,8].

In particular, the higher levels of perceived well-being and more pleasant emotional responses associated with natural stone and wood, compared with those observed for microcement, are consistent with the literature on biophilic design and neuroarchitecture, which attributes calming and restorative effects to materials of natural origin [6,7,41]. Several reviews have shown that the presence of wood in interior environments is associated with reduced perceived stress and increased subjective comfort when compared with plastic or highly industrialized surfaces [17,40].

The pattern observed for microcement—perceived as less aesthetically appealing and associated with higher stress levels—aligns with research on material perception indicating that cold, smooth, and industrial-looking surfaces may evoke feelings of impersonality or harshness [38,39]. This finding suggests that although microcement may be linked to contemporary aesthetics in certain contexts, its emotional impact in an intimate space such as the bathroom may not always be positive. Natural stone, however, exhibited a noteworthy nuance: while it was associated with globally positive emotions, it was also perceived as more stressful than vinyl and wood. This points to the idea that the psychological interpretation of a material integrates both its sensory properties and the symbolic associations it evokes—such as solidity or a sense of tactile coldness—resulting in a more complex perceptual profile, in line with previous research on material perception [39].

One of the most relevant findings is that perceived functionality did not show clear statistical differences between materials, despite some variability in the overall analysis. This suggests that when evaluating virtual images, participants may give greater weight to emotional and aesthetic impressions than to functional considerations, or that functionality is attributed to the bathroom design as a whole rather than to the cladding material itself.

This pattern is consistent with studies indicating that interior space evaluations are largely guided by rapid affective responses [15,35].

Second, regarding purchase intention, perceptual variables of a rational nature showed weaker and less consistent relationships than those of a more personal or affective nature. Aesthetic perception emerged as the most robust predictor of purchase intention across all materials, with correlation coefficients exceeding 0.75 in every case. This finding is consistent with research in interior design identifying aesthetics as the most influential component in subjective space evaluation, even surpassing functional factors [2,16]. It also aligns with recent neuroarchitectural literature highlighting the strong link between visual pleasure and psychological well-being, particularly in interior environments [5,41] such as bathrooms. In contrast, perceived stress was negatively associated with purchase intention, suggesting that environments experienced as overly activating or uncomfortable tend to elicit avoidance responses and reduce the likelihood of being chosen for one's own home, in line with affective approach–avoidance models in environmental psychology [42].

Notably, the set of personal or affective perceptions (aesthetics, well-being, emotional valence, and stress) displayed a similar pattern of association with purchase intention across all bathroom types. This consistency suggests that users respond less to the material as an isolated element and more to a global evaluation of the environment, in which cladding materials act as triggers of an emotional atmosphere constructed through the interaction of texture, color, lighting, and sensory associations [45]. Research in multisensory design and spatial perception shows that environmental experience does not arise from a single sensory attribute, but rather from the integration of multiple stimuli that jointly shape subjective appraisal and user behavior [46]. Consequently, this holistic approach should be prioritized when selecting bathroom cladding materials, given their combined impact on emotional perception and purchase intention.

Despite these contributions, the present study is limited by the use of rendered images as stimuli. While this approach facilitates standardization, it provides an incomplete sensory experience: static visual formats do not allow for the adequate assessment of touch, smell, temperature, or dynamic interaction with light—factors that play a decisive role in the lived experience of space [35,41]. Additionally, the inclusion of a label identifying the material in each stimulus, intended to approximate a realistic material selection context, may have influenced the participants' perceptions and should therefore be considered when interpreting the findings. This factor may partly explain the more favorable evaluations observed for wood and natural stone in the present study. The semantic cue associated with these materials may evoke associations with natural environments, which are often perceived as more restorative and psychologically comfortable [47]. Similarly, previous research on consumer perception has shown that environmentally associated labels can positively influence attitudes and purchase intentions toward products [48]. Furthermore, the bathrooms were presented from a single viewpoint in order to isolate the effect of the cladding material, which may limit the range of perceptual responses. Future research should therefore explore richer presentation formats, such as immersive virtual reality environments, which enhance perceptual realism and the sense of presence [49]. Additionally, guided mental imagery techniques could be incorporated to help participants cognitively "situate themselves" within the represented space and more vividly simulate the experience of use based on visual stimuli [50,51]. The gender distribution of the sample should also be considered when interpreting the findings, as 75% of the participants were female. Previous studies [9] suggest that domestic environments may be experienced differently depending on gender roles, patterns of use, and levels of attention to aesthetic and environmental qualities within the home. As a result, the perceptual responses observed in this study may

partially reflect preferences more commonly associated with female users. Future research should explore whether similar trends are observed in more gender-balanced samples.

5. Conclusions

The findings suggest clear implications for bathroom design practice: users tend to prefer spaces whose materiality fosters a positive emotional climate, greater aesthetic pleasure, higher levels of well-being, and lower perceived stress. In this sense, the selection of cladding materials should not be understood merely as a technical or stylistic decision, but as a factor with the capacity to reinforce the role of the bathroom in supporting users' psychological health. In practice, the results indicate that prioritizing cladding materials such as wood and natural stone in bathroom design may be particularly relevant in environments where user well-being is a key design objective. These results are consistent with existing evidence on the influence of materials on physical health [22,23,25]. Considering psychological and physical dimensions jointly allows empirical evidence to be translated into practical design criteria, aimed at creating bathrooms that are more comfortable, emotionally satisfying, and aligned with users' expectations and needs, integrating health, well-being, and lived experience within the domestic environment. These findings may therefore provide useful guidance for architects and interior designers, particularly within the context of Southern Europe, supporting more informed decisions about material selection in bathroom design with the aim of enhancing users' well-being and emotional comfort.

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