



Article Airport Green Environment and Its Influence on Visitors' Psychological Health and Behaviors

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Received: 6 November 2019; Accepted: 4 December 2019; Published: 9 December 2019



Abstract: This study uncovered the influence of an airport's green physical environment on visitors' psychological responses, affective responses, and loyalty behaviors as well as to build a sturdy theorization that related to the psychological resilience, attitude, satisfaction, brand-self connection, and loyalty for the airport. Based on a quantitative approach, our findings provided insight that a green physical environment affected the psychological resilience considerably. Moreover, such association increased a visitor's positive attitude, satisfaction, and brand-self connection with the creation of loyalty intentions. The prominent role of attitude in building loyalty intentions was unearthed. Our finding from a metric invariance test further showed that gender moderated the magnitude of the effect of satisfaction and brand-self connection on loyalty intentions. The study variables' role of mediating effect was also recognizable. Overall, the present study demonstrated the criticality of a green built environment and its role in explicating visitor responses/behaviors in the airport context in a successful manner.

Keywords: airport green built environment; psychological resilience; airport visitors; healthy atmospherics; brand-self connection; loyalty intentions

1. Introduction

Customers' favorable intentions and loyalty for a company, which include purchase intentions, recommendation intentions, and the willingness to pay, are major contributors to enhancing competitive advantage in the market share [1–3]. In recent years, airports have begun to actively seek the assurance that its visitors have a positive attitude, psychological well-being, and feel connected to the airport in order to ensure the airport's customer retention and profits, which ensures its survival and its long-term success in an increasingly challenging marketplace [1,4]. This has resulted in the airport operators' endeavors to design/build the airport environment to be greener, so that the airport's green physical environment could possibly bring diverse benefits for the visitors. These include psychological health and well-being, and various outcomes to its operators, which include an increase in the number of new/repeat visitors, expenditures, visit frequency, and positive word-of-mouth [4–6]. Therefore, in recent times, airport green physical environments have received considerable attention from current/potential visitors and industry practitioners [4,6].

An increasing amount of literature regarding environmental psychology and consumer behavior has shed light on the importance of healthy atmospherics to increase customers' mental/psychological health and pleasurable product/service experiences and to boost positive post-purchase behaviors for the products/services [7,8]. Furthermore, the factors that are associated with a green physical environment in the customer post-purchase decision-making process, which include psychological resilience, attitude, satisfaction, and brand-self connection, have been identified by many researchers [9,10].

According to these authors, these variables are also often considered as crucial contributors for building customer loyalty [11–13]. A research framework that encompasses these essential variables along with a green physical environment has been broadly believed to be a critical theoretical approach to explicate the customers' various post-purchase intention formation and behaviors. Nonetheless, empirical research that explores the probable relationships amid these crucial constructs and assessing the potential impact of such associations on the airport visitors' loyalty intention generation, is scarce.

In addition, even though the green physical environment has been researched in previous studies, the gender differences in the context of visitors' loyalty intention formation has rarely been explored in the airport industry. According to recent studies [5,14–16], gender difference in travelers' consumption behaviors and the loyalty generation process for tourism products is apparent. Despite this evidence, the effect of gender on the relationship between airport users' perception regarding a green physical environment and the cognitive/affective/conative responses have hardly been examined. Overall, given that airport operators are eager to enhance visitor retention/increase and visitor expenditure for the successful airport business, uncovering what factors elicit visitors' loyalty behaviors, which include, e.g., repeat visitation, word-of-mouth, and willingness to spend money, for the airport along with unearthing the role of gender is critical.

This study develops an approach to fill these research gaps, which is aimed at exploring the role of an airport green physical environment to elicit psychological resilience, and to identify the effect of such associations on attitude toward the airport, satisfaction with healthy atmospherics, and brand-self connection in the formation of visitors' loyalty intentions to the airport. Moreover, this study has attempted to reveal the relative criticality amongst the study variables in building loyalty intentions, and to unearth the mediating effect of the study constructs within the proposed theoretical framework. The present research has also tried to discover whether the magnitude of the relationship strength among the research variables differs across gender. A thorough review of the literature provided in the following section is followed by the methodology and the results. Lastly, a discussion and the implications for theory and practice are provided.

2. Literature Review

2.1. Green Physical Environment

Coping with visitors' increasing needs for healthy atmospherics and an environmentally sensitive aviation marketplace, as well as understanding the visitors' responses and behaviors derived from an airport green environment is of importance to airport operators [4,6]. The green physical environment of a building contributes to bringing diverse advantages to the environment, which include increasing air quality, decreasing noise, reducing energy consumption, and decreasing pollution, and to bring various benefits to the occupants, such as healthy ambient conditions, psychological well-being, mental health, and comfort [6,8,17]. Given this, offering pleasurable airport experiences to the visitors with an airport environment design in a green/healthy way is becoming an increasingly top priority for airport practitioners.

A green physical environment refers to the human-made green environment that possibly influences mental/physical health, emotions, and the behaviors of the occupants within a building/place [9]. The key constituents of green physical environments at airports that visitors are likely to perceive can be green spaces, green rest areas, green items (e.g., flowers, trees, plants), green décor (e.g., interior design, wall decoration), natural light through glass windows/walls/roofs, and fresh air (e.g., scent, circulation, temperature, humidity, ventilation) [4,6,9,18].

To date, the crucial role of green atmospherics to explain visitor responses and behaviors has been increasingly stressed [7,8,10,13]. Evidence in the existing literature has revealed that visitors' perceptions of the green physical environment of a store/place significantly increase their psychological resilience/well-being, which eventually leads to their increased willingness to be loyal to the store/place [10,13]. Consistently, the authors of [7] and [8] have indicated that green atmospherics

are a vital aspect of a nature-based solution that significantly relieves visitors' mental stress and improves their psychological well-being. More recently, the authors of [9] demonstrated that green indoor/outdoor atmospherics of a hotel cures guests' mental anxiety and boosts their psychological resilience, which ultimately induces positive guest responses and behaviors at the hotel. Based on this evidence, the following hypothesis was developed:

Hypothesis 1 (H1). A green physical environment has a positive effect on psychological resilience.

2.2. Psychological Resilience

Undoubtedly, psychological resilience, which covers mental health and well-being, is a vital issue in the global marketplace, because of the rapid increase in the number of consumers with mental health issues [13,19,20]. According to the authors of [13] and [21], such mental/psychological health-related problems include stress/anxiety from work (e.g., interpersonal struggles, work-associated challenges), depression, emotional disorders, and self-distrust. Psychological resilience indicates one's ability to navigate psychological/mental difficulty/adversity in a manner that protects his/her mental health, psychological well-being, and life satisfaction [20,22]. Feeling refreshed, relieving mental anxiety/stress, feeling mentally healthy, and feeling psychological well-being are crucial aspects of psychological resilience [19,20]. Individuals who have a strong psychological resilience effectively find a way of responding to diverse stress, which in turn minimizes the harmful impacts of this diverse stress on them and assists them in returning to normal [23].

The existing studies indicated that psychological resilience is a crucial concept that affects consumer attitude and behavior [24,25]. In their recent research in the retail service context, the authors of [25] examined the customer loyalty intention generation process. Their empirical results showed that customer well-being, as a constituent of psychological resilience, had a significant influence on gratitude and loyalty intentions. In their research, gratitude was depicted as the patrons' feeling of thankfulness toward the product/brand. The authors of [24] investigated children's travel behavior. Their finding indicated that children's psychological well-being has a significant association with children's preference and attitude toward travel modes used for a trip. Based on this evidence, we proposed the following research hypothesis:

Hypothesis 2 (H2). Psychological resilience has a positive effect on attitude toward the airport.

2.3. Attitude toward the Airport

Individuals' attitude toward the behavior/object has long been regarded as a vital constituent of their decision-making process and consumption behaviors [26–28]. According to [29], attitude is the individuals' general tendency toward a specific behavior/product/place formed based on their assessment if the behavior/product/place is favorable/unfavorable. This concept is frequently involved in theoretical frameworks in consumer behavior, since it has a substantial effect on the customer decision formation, and it contributes to the increased ability of the theoretical frameworks used to predict customer intentions and behavior [26,28–30].

In the customers' intention generation process, the attitude toward the product or consumption behaviors appears to be the core factor [28,29,31,32]. Indeed, the role of attitude becomes obvious when explaining customer post-purchase decision formation, and its importance has been extensively stressed [30,32,33] as a result. The individuals' attitude toward the place often forms on the basis of their belief about the possible outcomes when visiting it, such as psychological resilience and mental health [27–29]. This attitude is likely to increase visitors' satisfaction and strengthen the connection between the visitors and the place [8,31,33]. Accordingly, many practitioners in diverse businesses

make substantial efforts to deal with customer attitude to enhance their satisfaction level and their attachment to the product/brand [27,28]. Accordingly, the following hypotheses were proposed:

Hypothesis 3 (H3). Attitude toward the airport has a positive effect on satisfaction with healthy atmospherics.

Hypothesis 4 (H4). Attitude toward the airport has a positive effect on brand-self connection.

2.4. Satisfaction and its Role

Satisfaction is a core concept that has been extensively explored in extant studies because of the various positive outcomes it brings to the firm, which include loyalty, repeat business, positive word-of-mouth, and revenue increase [4,15,34,35]. The chief aspect of customer satisfaction is the evaluation process [11,34]. The authors of [34] described satisfaction as individuals' comprehensive evaluation or appraisal of their whole consumption experiences with a product/service/place based on their prior expectations regarding its performance. This concept is often considered as a vital constituent of the customer post-purchase decision-making process [11,36]. Its critical role in the development of loyalty intentions has been largely stressed in a variety of consumer behavior sectors [15,36].

The positive relations between satisfaction, brand-self connection, and loyalty intentions have been well-established in the extant literature [19,34,35,37]. With environmental behavior, the authors of [35] conducted research about green buildings and their users' behaviors. Their findings showed that the cognitive process, which is comprised of quality perception, evaluative process encompassing satisfaction, and normative process involving the morale norm, is crucial in explicating customer green behaviors and attachment to the building. According to their examination of travelers' post-purchase behaviors in the cruise sector, the authors of [36] also identified that traveler satisfaction formed based on their mental health is a significant trigger of customers' repeat intention to take another cruise and brand-self connection. Consistently, in the airline lounge sector, the authors of [19] found that satisfaction increases when customers feel positive mental health, and that such satisfaction helps customers feel connected to the place and be loyal to the airline lounge. Relying on this evidence, the following hypotheses were developed:

Hypothesis 5 (H5). Satisfaction with healthy atmospherics has a positive effect on brand-self connection.

Hypothesis 6 (H6). Satisfaction with healthy atmospherics has a positive effect on loyalty intentions.

2.5. Repurchase Intention

Repeated purchasing refers to a customer's repetitive buying behaviors for a specific company's products based on his/her past experiences [37]. Ajzen and Fishbein [35] described behavioral intention as individuals' subjective likelihood that they will practice a certain behavior. Repurchase intention in this study consistently indicated that the cruise passengers' subjective probability would engage in a repetitive buying behavior for a particular cruise line's product. According to Ajzen [24], intention is a direct and the most proximal determinant of the actual behavior. He also stressed that one's intention is critical, because it mostly results in his/her relevant actual behavior. Many studies showed that there are some critical requirements, such as employee kindness, quality of products/services, physical environment, and brand trust/attitude/image that are compulsory for repeating the purchasing intention [8,11,38,39]. Numerous researchers and practitioners have focused on heightening repurchase intention/behavior, because of its close relationship with a company's profits [11,37].

2.6. Brand-Self Connection

A connection between a customer and a brand/product/place is often described as a crucial aspect of extant theoretical frameworks for purchasing behaviors [34,38,39]. Such a connection can be depicted as brand-self connection [39]. According to the authors of [40], brand-self connection implies the strength of the cognitive/affective bonding that a patron (the self) feels about a brand. Brand-self connection is alternately used with the term brand attachment [41]. Customers often make a positive response and conduct a favorable behavior for the brand when they feel a strong connection/attachment to it [38,42]. Thus, brand-self connection frequently serves as a vital indicator of customer post-purchase decision/behavior [39,41,43].

The existing studies indicated the considerable effect of brand-self connection on post-purchase decisions [38,40,41,44]. For instance, the authors of [44] demonstrated that a brand-self connection is formed based on the cognitive antecedents that exert a significant influence on brand loyalty in the green product consumption context. They also found the significant mediating role of self-brand connection. Evidence in the consumer behavior and marketing sectors also revealed that the self-brand connection is significantly associated with customer post-purchase intentions and behaviors [38,39,41,43]. Patrons often relate to a specific brand if the brand and its products satisfactorily deliver values that fulfill their needs, and the association between the patron and the brand boosts the level of the patrons' loyalty to the brand [40,44]. Based on this theoretical reasoning, the following hypothesis was developed:

Hypothesis 7 (H7). Brand-self connection has a positive effect on loyalty intentions.

2.7. Gender and its Effect

Gender has long been considered as one of the core socio-demographic variables that affect consumer decision and purchasing behaviors [5,15,45]. Male and female customers show a different level of preference [16], product performance assessment [5], satisfaction [14,15], and behavioral intentions [46] in product/service consumption situations. Male and female patrons also show a different attitude toward the product and its attributes [14,45]. Many researchers have therefore stressed the criticality of gender in explicating individuals' consumption behaviors [5,15,16].

For instance, the authors of [5] investigated the airline customers' loyalty intention generation process. Their findings showed that the associations among psychological benefits and loyalty intentions, which include purchase intention, word-of-mouth, and pay intention, are under a significant influence from gender. In examining the patrons' wine consumption behaviors, the authors of [15] found that the relationship between wine promotion factors and patron satisfaction was significantly affected by gender in the formation of behavioral intentions. In the airline product consumption sector, the authors of [46] demonstrated that the passengers' decision-making process comprising perception/cognition and attachment/connection significantly differs across gender. The essential constituents of the customer decision formation encompass cognitive, affective, and conative variables [34,47]. The authors of [45] and [46] asserted that such decision formation is considerably affected by gender. Given this evidence, it is assumed that the airport users' loyalty intention generation process can be significantly different across gender. Therefore, the following hypotheses were formulated:

Hypothesis 8a–g (H8a–g). *The associations among research constructs of the present study are under a significant influence from gender.*

The proposed model is exhibited in Figure 1. Our theoretical framework comprises the green physical environment, psychological resilience, attitude toward the airport, satisfaction with healthy environment, and brand-self connection as direct/direct antecedents of the airport visitor loyalty

intentions. In addition, the framework integrates gender as a moderator. A total of eight hypotheses were incorporated into the proposed model.

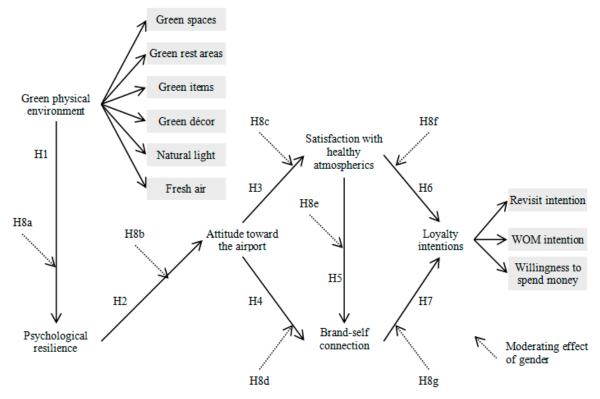


Figure 1. Proposed conceptual model and research hypotheses.

3. Methods

3.1. Measures

The measures used were adopted from existing studies [4,9,17,18,27,29,34,40,48]. Multiple items were rated on a 7-point scale. Specifically, a total of 6 items, which included green spaces, green rest areas, green items, green décor, natural light, and fresh air, were utilized for the evaluation of green physical environment (e.g., "Green rest areas are easily accessible throughout this airport"—"strongly disagree" [1] "strongly agree" [7]). Additionally, we used 3 items for psychological resilience (e.g., "Using this airport helps me feel refreshed"—"strongly disagree" [1]"strongly agree" [7]) and 4 items for attitude toward the airport (e.g., "For me, using this airport is"—"bad" [1]"good" [7]).

A total of 3 items for visitor satisfaction with healthy environment (e.g., "Overall, I am satisfied with healthy atmospherics at this airport"—"strongly disagree" [1] "strongly agree" [7]) and 3 items for brand-self connection (e.g., "To what extent do you feel that you are personally attached to this airport?"—"not at all" [1] "completely" [7]) were used. Lastly, loyalty intentions were measured with 3 items (i.e., revisit intention, word-of-mouth intention, and willingness to spend money) (e.g., "I would repeatedly visit this airport for shopping/dining/relaxing"— "strongly disagree" [1] "strongly agree" [7]). The survey questionnaire contains a total of 22 measurement items with a research description. Tourism academics pretested the questionnaire and a small modification was made in response to their feedback.

3.2. Data Collection and Socio-Demographic Profiles of the Samples

To collect the data, a Web-based survey was conducted. The samples were selected from the online survey firm's database in a random manner. Only those individuals who had visited an international airport at least once within the last 6 months were requested to answer the survey questions. They were asked to click the URL included in the survey invitation e-mail to access the survey questionnaire. A detailed description of the survey was provided to be read by all the participants of the survey before answering the questions. The survey required the participants to indicate the name of the international airport that they had visited most recently. The participants completed the survey questionnaire based on their experiences at the airport they indicated as visiting the most recently. The survey took about 11 min. We gained a total of 310 usable cases from 3000 invitations that were sent out, which were subsequently analyzed.

Among the 310 participants, about 58.7% were male visitors, and 41.3% were female. The respondents' average age was 42.38 years old. Regarding the frequency of airport visits within the last 6 months, about 48.4% indicated 2–3 times, followed by one time (32.3%), 4–5 times (11.6%), and 6 times or more (7.7%). A total of 67.4% reported that they were married, and 32.6% indicated that they were single. In terms of the education level of the participants, 62.3% indicated that they were 4-year college graduates, followed by 2-year college graduates/some college (16.1%), graduate degree holders (15.2%), and high school graduates or less (6.5%). About 45.5% of the respondents reported a monthly income of \$5000 or less. In addition, about 36.1% of the respondents reported a monthly income spondents spondents reported a monthly income of \$5000 and \$8000, and about 18.4% indicated a monthly income of \$8000 or more.

3.3. Data Analysis Process

The data analysis was conducted using SPSS 22 and AMOS 22. Applying the two-step approach by Anderson and Gerbing [49], confirmatory factor analysis (CFA) was used initially to test the constructs of the model and then structural equation modeling (SEM) was applied to estimate the relationships of the valid constructs [49,50] Lastly, Chi-square was employed to assess the moderating effects of gender.

4. Results

4.1. Confirmatory Factor Analysis and Validity Testing

Before testing the hypotheses using AMOS 22, SPSS 22 was used to conduct an exploratory factor analysis to measure the factor loadings. Then, a CFA was employed, and the measurement model was created. CFA allows researchers to test the hypotheses about particular components and show if the component is meaningful or not. This is done with several special programs, such as AMOS, LISREL, and EQS. The model in general fit the data adequately ($\chi^2 = 503.187$, df = 193, p < 0.001, $\chi^2/df = 2.607$, root mean square error of approximation (RMSEA) = 0.072, comparative fit index (CFI) = 0.950, incremental fit index (eIFI) = 0.950, and Tucker–Lewis index (TLI) = 0.940) (see Table 1). A composite reliability was assessed. Our assessment showed that the values exceeded the recommended threshold of 0.70 (green physical environment = 0.926, psychological resilience = 0.922, attitude = 0.928, satisfaction = 0.908, brand-self connection = 0.860, and loyalty intentions = 0.843) [51]. Thus, the internal consistency of the measures was visible. For the test of construct validity, the average variance of the extracted values was calculated. Our assessment revealed that all the values were greater than the recommended threshold of 0.50 (green physical environment = 0.681, psychological resilience = 0.798, attitude = 0.764, satisfaction = 0.766, brand-self connection = 0.673, and loyalty intentions = 0.646) [51]. These values were also all greater than the correlation (squared) between the factors (see Table 1).

	(1)	(2)	(3)	(4)	(5)	(6)	Mean (SD)	CR	AVE
(1) Green physical environment	1.000	-	-	-	_	-	4.103 (1.222)	0.926	0.681
(2) Psychological resilience	0.653 a (0.426) b	1.000	-	-	-	-	4.342 (1.221)	0.922	0.798
(3) Attitude toward the airport	0.314 (0.099)	0.377 (0.142)	1.000	-	-	-	4.298 (1.200)	0.928	0.764
(4) Satisfaction with healthy atmospherics	0.284 (0.081)	0.254 (0.065)	0.787 (0.619)	1.000	-	-	4.682 (1.082)	0.908	0.766
(5) Brand-self connection	0.265 (0.070)	0.284 (0.081)	0.589 (0.347)	0.580 (0.336)	1.000	-	4.840 (1.109)	0.860	0.673
(6) Loyalty intentions	0.296 (0.088)	0.348 (0.121)	0.809 (0.654)	0.770 (0.593)	0.635 (0.403)	1.000	4.484 (1.226)	0.843	0.646

Table 1. Results of the measurement model assessment (n = 310).

Note: SD = standard deviation, CR = composite reliability, AVE = average variance extracted, RMSEA = root mean square error of approximation, CFI = comparative fit index, IFI = incremental fit index, and TLI = Tucker–Lewis index; Goodness-of-fit statistics for the measurement model: χ^2 = 503.187, df = 193, p < 0.001, χ^2/df = 2.607, RMSEA = 0.072, CFI = 0.950, IFI = 0.950, and TLI = 0.940; a Correlations between constructs; b Squared correlations.

4.2. Structural Equation Modeling and Hypothesis Testing

The conducted structural equation modeling showed that the created model had an acceptable fit to the data ($\chi^2 = 543.512$, df = 201, p < 0.001, $\chi^2/df = 2.704$, RMSEA = 0.074, CFI = 0.945, IFI = 0.945, and TLI = 0.936). As shown in Table 2 and Figure 2, the proposed theoretical framework satisfactorily accounted for the total variance in the loyalty intentions ($R^2 = 0.861$). The model also clarified about 47.2% of the total variance in the brand-self connection and about 78.4% of the variance in satisfaction. Also, about 15.4% of the variance in attitude and about 42.4% of the variance in psychological resilience were accounted for by its antecedent(s), respectively.

Table 2. Results of the structura	l model assessment ($n = 310$).
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Нур	Coefficients	t-Values	Variance Explained (R ²)		
H1: Green physical environment	\rightarrow	Psychological resilience	0.652	12.363 **	0.424
H2: Psychological resilience	\rightarrow	Attitude toward the airport	0.393	6.740 **	0.154
H3: Attitude toward the airport	\rightarrow	Satisfaction with healthy atmos.	0.886	16.603 **	0.784
H4: Attitude toward the airport	\rightarrow	Brand-self connection	0.377	2.718 **	0.472
H5: Satisfaction with healthy atmos.	\rightarrow	Brand-self connection	0.330	2.340 *	
H6: Satisfaction with healthy atmos.	\rightarrow	Loyalty intentions	0.679	11.010 **	0.861
H7: Brand-self connection	\rightarrow	Loyalty intentions	0.326	5.776 **	

Goodness-of-fit statistics for the structural model: $\chi^2 = 543.512$, df = 201, p < 0.001, $\chi^2/df = 2.704$, RMSEA = 0.074, CFI = 0.945, IFI = 0.945, and TLI = 0.936, * p < 0.05, ** p < 0.01.

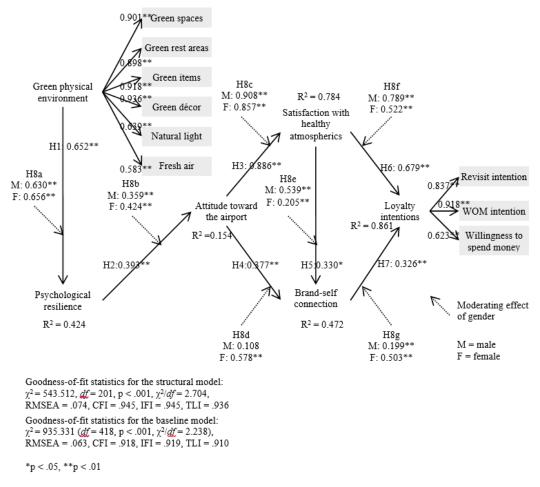


Figure 2. Results of the structural model and baseline model assessment (n = 310).

Testing Hypotheses 1 and 2 revealed that green physical environment exerted a significant impact on psychological resilience ($\beta = 0.652$, p < 0.01) as expected. In addition, psychological resilience had a significant influence on attitude toward the airport ($\beta = 0.393$ and p < 0.01). Therefore, Hypotheses 1 and 2 were supported. The proposed effect of attitude was assessed. Our result revealed that attitude toward the airport included a significant effect on satisfaction with healthy environment ($\beta = 0.886$ and p < 0.01) and brand-self connection ($\beta = 0.377$ and p < 0.01). This result supported Hypotheses 3 and 4. The hypothesized effect of satisfaction was assessed. Our finding discovered that satisfaction significantly affected brand-self connection ($\beta = 0.330$ and p < 0.01) and loyalty intentions ($\beta = 0.679$ and p < 0.01). Thus, Hypotheses 5 and 6 were supported. Lastly, Hypothesis 7 was tested and showed that brand-self connection significantly influenced loyalty intentions ($\beta = 0.326$ and p < 0.01). Therefore, Hypothesis 7 was supported.

The indirect influence of research constructs was assessed. As exhibited in Table 3, green physical environment contained a significant indirect influence on attitude ($\beta = 0.256$ and p < 0.01), satisfaction ($\beta = 0.227$ and p < 0.01), brand-self connection ($\beta = 0.171$ and p < 0.01), and loyalty intentions ($\beta = 0.210$ and p < 0.01). Our result also showed that psychological resilience contained a significant indirect influence on satisfaction ($\beta = 0.348$ and p < 0.01), brand-self connection ($\beta = 0.263$ and p < 0.01), and loyalty intentions ($\beta = 0.322$ and p < 0.01). Moreover, attitude significantly affected brand-self connection ($\beta = 0.293$ and p < 0.05) and loyalty intentions ($\beta = 0.820$ and p < 0.01) indirectly through satisfaction. This finding implies that psychological resilience, attitude, satisfaction, and brand-self connection played a substantial mediating role in the proposed model. Subsequently, the total influence of the research constructs was assessed. Our result showed that attitude had the strongest impact on loyalty intentions ($\beta = 0.820$ and p < 0.01), followed by satisfaction ($\beta = 0.787$ and p < 0.01), brand-self

connection (β = 0.326 and *p* < 0.01), psychological resilience (β = 0.322 and *p* < 0.01), and a green physical environment (β = 0.210 and *p* < 0.01).

On	Indirect Effect of						
	Green Physical Environment	Psychological Resilience	Attitude toward the Airport	Satisfaction with Healthy Atmos.	Brand-Self Connection		
Attitude toward the airport	0.256 **	-	_	-	_		
Satisfaction with healthy atmosphere	0.227 **	0.348 **	_	-	-		
Brand-self connection	0.171 **	0.263 **	0.293 *	-	_		
Loyalty intentions	0.210 **	0.322 **	0.820 **	0.108	-		
Total impact on loyalty intentions	0.210 **	0.322 **	0.820 **	0.787 **	0.326 **		

Table 3. Indirect impact and total impact assessment (n = 310).

Goodness-of-fit statistics for the structural model: $\chi^2 = 543.512$, df = 201, p < 0.001, $\chi^2/df = 2.704$, RMSEA = 0.074, CFI = 0.945, IFI = 0.945, TLI = 0.936, * p < 0.05, ** p < 0.01.

4.3. Invariance Model and Moderation Testing

To evaluate the moderating influence of gender, a test for metric invariance was conducted. The 310 participants were split into a male visitors' group (n = 182) and a female visitors' group (n = 128). A baseline model, which all loadings across both gender groups are constrained in an equivalent manner, indicated that the model satisfactorily fit to the data (χ^2 = 935.331 (df = 418, p < 0.001, χ^2 /df = 2.238), RMSEA = 0.063, CFI = 0.918, IFI = 0.919, and TLI = 0.910). This model was used for the modeling comparison with the nested models. Figure 2 and Table 4 include the findings of the metric invariance test.

Table 4. Results of the invariance model assessment for the gender groups.
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Paths -	Male Visitor (n = 182)		Female Visitor (n = 128)		Baseline Model	Nested Model	
1 atiis	Coefficients	t-Values	Coefficients	t-Values	(Freely Estimated)	(Constrained to Be Equal)	
$GPE \rightarrow PR$	0.630	9.255 **	0.656	8.580 **	χ^2 (418) = 935.331	χ^2 (419) = 935.336 a	
$PR \rightarrow A$	0.359	4.690 **	0.424	4.835 **	χ^2 (418) = 935.331	χ^2 (419) = 935.332 b	
$A \rightarrow S$	0.908	14.739 **	0.857	12.402 **	χ^2 (418) = 935.331	χ^2 (419) = 936.315 c	
$A \rightarrow BSC$	0.108	0.456	0.578	3.469 **	χ^2 (418) = 935.331	χ^2 (419) = 938.912 d	
$S \rightarrow BSC$	0.539	2.215 *	0.205	1.232	χ^2 (418) = 935.331	χ^2 (419) = 936.642 e	
$S \rightarrow LI$	0.789	9.880 **	0.522	6.088 **	χ^2 (418) = 935.331	χ^2 (419) = 941.602 f	
$\text{BSC} \to \text{LI}$	0.199	2.856 **	0.503	5.503 **	χ^2 (418) = 935.331	χ^2 (419) = 942.820 g	
	ference test: 05 and <i>p</i> > 0.05 (1 01 and <i>p</i> > 0.05 (1				gender groups: $\chi^2 = 9$	tics for the baseline model for 935.331 (df = 418, $p < 0.001$, A = 0.063, CFI = 0.918,	
$c \Delta \chi^2$ (1) = 0.984 and $p > 0.05$ (H8c—not supported)					χ year 2.200) full birling of 0.000 (211 0.010) IFI = 0.919, and TLI = 0.910		
$d \Delta \chi^2(1) = 3.581$ and $p > 0.05$ (H8d—not supported)					* $p < 0.05$, ** $p < 0.01$		
$e \Delta \chi^2 (1) = 1.3$	11 and $p > 0.05$ (1	H8e—not supp	orted)		, ,		
$f \Delta \chi^2 (1) = 6.22$	71 and $p < 0.05$ (H	18f—supporte	d)				
$g \Delta \chi^2 (1) = 7.4$	89 and $p < 0.01$ (1	H8g—support	ed)				

Note. GPE = green physical environment, PR = psychological resilience, A = attitude toward the airport, S = satisfaction with healthy atmospherics, BSC = brand-self connection, LI = loyalty intentions.

Our finding of the Chi-square test indicated that the path from a green physical environment to psychological resilience ($\Delta \chi^2$ [1] = 0.005 and p > 0.05) and the path from psychological resilience to attitude ($\Delta \chi^2$ [1] = 0.001 and p > 0.05) were not meaningfully different between the male and the female groups. Thus, Hypotheses 8a and 8b were not supported. In addition, the linkages from attitude to satisfaction ($\Delta \chi^2$ [1] = 0.984 and p > 0.05), from attitude to brand-self connection ($\Delta \chi^2$ [1] = 3.581 and p > 0.05), and from satisfaction to brand-self connection ($\Delta \chi^2$ [1] = 1.311 and p > 0.05) did not noticeably differ across the groups. Therefore, Hypotheses 8c, 8d, and 8e were not supported. However, our result showed that the path from satisfaction to loyalty intentions ($\Delta \chi^2$ [1] = 6.281 and p < 0.05) and the

path from brand-self connection to loyalty intentions ($\Delta \chi^2$ [1] = 7.489 and *p* < 0.05) were meaningfully different between the gender groups. This result accordingly supported Hypotheses 8f and 8g, which proved the moderating effect of gender on the paths.

5. Discussion and Implications

This study attempted to develop a thorough theoretical framework that encompassed the airport green physical environment and its constituents, psychological resilience, attitude, satisfaction with healthy atmospherics, and brand-self connection, which has hardly been applied to explain visitor loyalty formation in the airport industry. The hypothesized associations among the research constructs were generally well supported. The salient role of attitude along with satisfaction with healthy environment was uncovered. In addition, satisfaction positively affected brand-self connection for both genders. Brand-self connection showed positive effects on loyalty intention, because the linkages from satisfaction and the brand-self connection to the loyalty intentions were evident. However, this was under the significant influence of gender. The proposed framework sufficiently accounted for the total variance with loyalty intentions. Because there was little known about the airport built environment and its role with visitor behaviors, the present study successfully provides a clear understanding regarding a green physical environment and its relation to the visitors' psychological resilience, affective responses, and loyalty behaviors in the airport sector.

The empirical findings of this study demonstrated the criticality of airport green atmospherics in the hypothesized conceptual framework. In particular, an airport green physical environment was identified as a significant factor that directly/indirectly influences the psychological resilience and its subsequent factors. Along with many previous studies that proved the positive effects of a green environment in people's psychological resilience and emotions, this study successfully assessed and explored the significant role of a green environment of an airport in the formation of visitors' positive mental state/emotions and favoritism for a green airport going beyond the existing studies in the tourism/airline literature. This finding implies that simply fortifying the functional aspect of an airport for visitors is not enough to satisfy their needs of psychological resilience when using an airport. Given the evidence of this study, increasing the availability and the accessibility of green spaces, green rest areas, green items, décor, and improving ambient conditions, which include air quality and natural light, inside and outside of the airport can be of importance to fulfill the visitors' needs of psychological resilience, which include feeling refreshed, reducing any mental stress, feeling mentally healthy, and feeling psychological well-being. Airport practitioners accordingly should place an emphasis on designing/improving a green physical environment at airports by using diverse financial and non-financial resources. This endeavor can be an essential tool to induce visitors' psychological resilience, positive attitude, positive assessment of their airport experiences, and enhance loyalty intentions for the airport.

The total influence of attitude toward the airport on visitor loyalty retentions was uncovered to be greater than other study variables. This attitude also had a substantial impact on visitor satisfaction and brand-self connection. Based on this evidence, it is clear that airport operators should make considerable efforts to boost visitors' favorable attitude toward the airport with the enhancement of visitors' loyalty intentions. The authors of [5] and [26] asserted that customers' beliefs about the possible outcomes derived from the consumption of a specific product/service significantly contribute to improving the positive attitude toward it. Accordingly, airport operators should actively inform their current/potential visitors about the likely benefits that the visitors can enjoy while using the airport, which could possibly include a healthy environment, psychological well-being, pleasurable shopping, and cheaper prices, through diverse communication channels. This type of effort will be an efficient tactic to increase the visitors' positive attitude toward the airport, which ultimately brings increased satisfaction, attachment, and loyalty intentions.

Our findings regarding the indirect influence of the study variables showed the significant mediating effect of psychological resilience, attitude toward the airport, satisfaction with healthy environment, and brand-self connection on the formation of visitor loyalty intentions. The mediating role of these constructs within the hypothesized theoretical framework was evident. Our results not only supported Yusof, Awang, and Jusoff's [52] finding that green environment/environment-friendly practices indirectly affect loyalty, but also further discovered several other mediating constructs on loyalty. Theoretically, these mediators can be utilized as important tools in further studies, which include the development of a conceptual model and theory, in the airport sector. Our findings offered practical crucial information that dealt with visitor psychological resilience, attitude, satisfaction, and brand-self connection that is indisputably important for airport operators to maximize the role of a green physical environment to induce visitors' pleasurable airport experiences and loyalty to the airport.

The findings of the test for metric invariance demonstrated the moderating impact of gender on the linkages from satisfaction and brand-self connection to loyalty intentions. Specifically, the strength of the association between satisfaction and loyalty intention was significantly stronger with the male group ($\beta = 0.789$ and p < 0.01) than with the female group ($\beta = 0.522$ and p < 0.01), whereas the strength of the relationship between brand-self connection and loyalty intention was significantly stronger with the female group ($\beta = 0.503$ and p < 0.01) than with the male group ($\beta = 0.199$ and p < 0.01). This result implies that (a) at a similar satisfaction level, male visitors build a higher level of loyalty intentions than female visitors and (b) at a similar level of brand-self connection, female visitors build stronger loyalty intentions than male visitors. In a theoretical manner, our findings provided important information that illustrate that utilizing gender is critical to understanding visitor experiences and behaviors in an airport. The existing conceptual frameworks related to airport visitor experiences and behaviors are deepened by the incorporation of gender influence. From a practical perspective, airport operators need to center on satisfaction enhancement for the effective increase of male visitors' loyalty intentions. As demonstrated in the present study, offering/strengthening green healthy atmospherics can be one way to increasing male visitors' satisfaction level in an efficient manner. Meanwhile, for an effective increase of female visitors' loyalty intentions, it is crucial for airport operators to focus on fortifying a brand-self connection. According to [46], dealing with brand image is an excellent way to help female customers feel connected to the brand. It is, therefore, important that airport operators should increase the image of the airport for the enhanced brand-self connection among female visitors.

Even though this study offers meaningful theoretical/practical implications, this research has several limitations. First, the sampling of a subset of a larger population was possible through an online survey, but it was difficult to capture the visitors' immediate airport experiences. For future studies, a field survey at airport is recommended. Second, this study did not take into consideration whether the respondents were first-time or repeat visitors of the airport. The importance of taking this variable into consideration in future studies is demonstrated by the conjecture that these two segments of visitors differ in regards to their motivations and evaluations toward the place [53]. Hence, future studies are suggested to replicate the conceptual framework with other samples that control for the respondents' prior experience with the airport. Lastly, this study applied a quantitative method to investigate the proposed model, which suggested further applicable research methods to be performed in the future studies with larger sample sizes are required in order to enhance the generalization of the study findings, such as using a qualitative method.

Author Contributions: Funding acquisition H.-C.K.; Project administration H.-C.K.; Visualization L.H.L.; Writing—original draft H.H.; Writing—review and editing L.H.L.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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