Chapter 6 / Capítulo 6

Habitability, territory, and sustainability: Interdisciplinary studies on housing, environment, and society in northwestern Mexico
ISBN: 978-9915-9966-6-0
DOI: 10.62486/978-9915-9966-6-0.Ch06
Pages: 73-85

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Place identity and appraisal of climate-adapted traditional architecture in Mazatlán: Preliminary psychometric properties of a scale

Identidad de lugar y valoración de la arquitectura tradicional adaptada al clima en Mazatlán: propiedades psicométricas preliminares de una escala

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ABSTRACT

Traditional architecture in hot cities combines heritage value, identity bonds and climate-adaptive solutions. This instrumental study examined the preliminary psychometric properties of a place identity and traditional architecture appraisal scale, with ten items and two dimensions, Mazatlán identity and Appraisal of traditional architecture, in the pilot survey of project FZ-HAB-0014 on the Factoriza UAS platform, conducted in the Historic Centre and old neighbourhoods of Mazatlán. With a cross-sectional design, 9 cases out of a target of 100 were analysed while data collection remained open. Descriptive statistics, Cronbach's alpha, McDonald's omega total and the Spearman correlation between dimensions were estimated, and an exploratory factor analysis was attempted. Internal consistency was high for Mazatlán identity (α = .871; ω = .884) and for Appraisal of traditional architecture (α = .873; ω = .887), with the reverse-worded items as the least coherent. The factor analysis was not interpretable because the sample had fewer cases than items, and the dimensions were positively correlated (ρ = .723), with a very wide interval. Residents valued the coolness of high ceilings and wished new housing to retain traditional elements, although they leaned towards preferring new buildings. The findings are an initial favourable signal that the final data cut must confirm.

Keywords: place identity; built heritage; climate-adapted architecture; psychometric evidence

RESUMEN

La arquitectura tradicional de las ciudades cálidas reúne valor patrimonial, vínculos identitarios y soluciones de adaptación al clima. Este estudio instrumental examinó las propiedades psicométricas preliminares de una escala de identidad de lugar y valoración de la arquitectura tradicional, de diez reactivos y dos dimensiones, Identidad mazatleca y Valoración de la arquitectura tradicional, en el levantamiento piloto del proyecto FZ-HAB-0014 de Factoriza UAS, aplicado en el Centro Histórico y barrios antiguos de Mazatlán. Con diseño transversal, se analizaron 9 casos de una meta de 100, con el levantamiento abierto. Se estimaron descriptivos, alfa de Cronbach, omega total y la correlación de Spearman entre dimensiones, y se intentó un análisis factorial exploratorio. La consistencia interna fue alta en Identidad mazatleca (α = .871; ω = .884) y en Valoración de la arquitectura tradicional (α = .873; ω = .887), con los reactivos inversos como los menos coherentes. El análisis factorial no fue interpretable porque la muestra tiene menos casos que reactivos, y las dimensiones se correlacionaron de manera positiva (ρ = .723), con un intervalo muy amplio. Los residentes valoraron la frescura de los techos altos y desearon que la vivienda nueva conserve elementos antiguos, aunque se inclinaron por las construcciones nuevas. Los resultados constituyen una primera señal favorable que el corte final deberá confirmar.

Palabras clave: identidad de lugar; patrimonio edificado; arquitectura adaptada al clima; evidencias psicométricas

INTRODUCTION

The traditional architecture of cities is at once material heritage and a component of the identity of those who inhabit them. In hot climates, much of this architecture incorporated solutions that respond to heat, such as high ceilings, thick walls, porticoes and cross-ventilation. Residents' appraisal of it therefore brings together aesthetic judgments, emotional bonds with place and perceptions of comfort.

Understanding how identification with the city relates to the appraisal of its traditional architecture is relevant to heritage conservation and to the design of new housing.

Mazatlán offers a distinctive case for this study. Its Historic Center includes a Historic Monuments Zone declared in 2001, comprising 479 buildings, and, according to the study by Castillo Romero (2023), its cultural function was largely replaced by a tourism function starting in the decade that began in 2010. This shift involved the adaptation of listed buildings for bars and restaurants, the construction of a condominium tower, and residents' protests over nighttime noise, although residential use still predominated.

The city is also undergoing a broader transformation associated with tourism: the boom in high-rise construction has generated social tensions along the coastal strip (Bojorquez Luque et al., 2023); the Playa Norte area has been examined from the perspective of creative destruction (Bojórquez Luque and Osuna Covarrubias, 2025); and studies have documented processes of touristification and tourism gentrification with sociocultural impacts on the local population (Mendieta Vega and Roldán Clarà, 2024).

In this context, residents' appraisal of old houses is not merely a matter of taste. It expresses their attachment to the city and their willingness to support the conservation of a heritage that competes with new ways of building.

At the same time, occupants of social housing in northwestern Mexico have described it as hot (Barraza-Bracamontes et al., 2022), which makes it relevant to ask whether residents recognize in traditional architecture comfort solutions that new housing could recover. However, no brief instruments were identified that jointly measure identification with the city and appreciation of its climate-adapted traditional architecture.

Project FZ-HAB-0014 of the Factoriza UAS platform set out to study place identity and the appraisal of climate-adapted traditional architecture in Mazatlán. To this end, the Place Identity and Appraisal of Traditional Architecture Scale was designed, comprising ten items organized into two dimensions: Mazatlán Identity and Appraisal of Traditional Architecture.

This article reports the results of the preliminary data cut of the pilot survey, administered in the Historic Center and old neighborhoods of the city.

The overall objective was to examine the preliminary psychometric properties of the scale in that data cut. The specific objectives were, first, to describe residents' self-reported identification with the city and their appraisal of traditional architecture; second, to estimate the internal consistency of each dimension using alpha and omega coefficients and to identify items showing discrepant behavior; third, to assess the feasibility of an internal structure analysis with the available sample size; and fourth, to describe the relationship between the scores on the two dimensions. The project package does not record any hypotheses, so the study is descriptive and exploratory in scope.

DEVELOPMENT

PLACE IDENTITY AND PLACE ATTACHMENT

Place identity refers to the part of personal identity that is constructed through one's relationship with a place, and it is usually studied together with place attachment and place dependence. A systematic review of research published between 2010 and 2021 on place attachment and behavioral intentions concluded that there is no consensus on how place attachment should be measured and that its dimensions do not relate to behavioral intentions in the same way (Dang and Weiss, 2021).

In rural households in earthquake-prone areas of China, for example, place dependence was negatively associated with the intention to relocate, whereas place identity was indirectly related to evacuation intention through perceived response efficacy (Qing et al., 2022).

The relationship between identity and the built environment is central to this literature. The review by Kamani Fard and Paydar (2024) on place attachment in urban settings noted that social

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

interaction and local features that express history and culture are associated with a stronger bond.

In Quanzhou, a World Heritage Site in China, a survey of 383 visitors to historic buildings found that multisensory perception, physical involvement, and cognitive processing were positively associated with place attachment and with the intention to support the destination, and that residents' identity climate strengthened some of these relationships (Cai et al., 2025).

In the ancient city of Pingyao, researchers have examined how the emotions and actions of residents of a heritage tourism destination evolve from conflict to co-creation (Xing, 2026).

The Mazatlán identity dimension of the instrument captures the centrality of being from Mazatlán in one's self-definition (R1), identification with the city's customs (R2), pride in living there (R3), the perception that Mazatlán is a place like any other (R4, reverse-scored) and missing the city when away from it (R5). It therefore combines components of identity, pride and affective attachment.

TRADITIONAL ARCHITECTURE AND CLIMATE ADAPTATION

Traditional architecture in hot regions has been studied as a repertoire of passive thermal control strategies. In a traditional stilt house in Indonesia, Arminda and Darmayanti (2026) measured surface temperatures and simulated solar exposure. They found that the configuration of the building envelope and the layering of materials markedly influenced thermal performance: a double timber wall with an air cavity maintained lower indoor temperatures, a timber ceiling reduced heat transfer from the roof, and enclosing the space beneath the house restricted ventilation.

The authors highlighted how traditional elements and their later modifications interact with the tropical climate, and presented their findings as evidence for conserving this type of housing.

In Mexico, the revival of bioclimatic strategies in historic buildings has been explored through simulation. In the Historic Center of Oaxaca, Aguilar Osante et al. (2026) proposed an intervention in a deteriorated building using bioclimatic strategies evaluated through energy simulation; these strategies brought indoor temperatures closer to comfort conditions and reduced cooling energy consumption.

In Irbid, Jordan, another hot setting, apartment residents perceived a more intense heat island in their neighborhood and rated tree shade and natural ventilation as less effective than did residents of single-family houses (Obeidat, 2026), which shows that housing type is associated with how occupants value passive strategies.

The instrument's Appreciation of Traditional Architecture dimension captures the regard for old houses as part of the city's identity (R6), the coolness of houses with high ceilings (R7), the appeal of porticoes (R8), the preference for new buildings over old ones (R9, reverse-scored), and the desire for new houses to retain elements of old ones (R10). It thus combines one symbolic appraisal, two appraisals of climate-adapted elements, and two attitudes toward new housing.

BUILT HERITAGE, TOURISM AND NEIGHBORHOOD LIFE

Residents' relationship with built heritage is affected by the tourist uses of historic centers. In the historic center of Zacatecas, Ramos-Jiménez and De La Barrera-Medina (2025) linked housing for tourist use to a reduction in the supply of traditional rental housing, rising rents, the displacement of residents, and the loss of traditional commerce.

In Mazatlán, Castillo Romero (2023) concluded that recent transformations in the architecture and urban layout of the Historic Center have responded more to touristification and economic interests than to heritage conservation, and recommended prioritizing conservation, regulating noise, and promoting housing. In this context, residents' identification with the city and their appreciation of traditional architecture are resources for conservation, and measuring them can guide policies for the historic center.

VALIDITY EVIDENCE IN THE INITIAL STAGE OF SCALE DEVELOPMENT

The internal consistency of a dimension is usually estimated with Cronbach's alpha (Cronbach, 1951), which assumes equivalent loadings across items, and with McDonald's omega (McDonald, 1999/2013), which does not; simulation studies have compared how the two coefficients perform

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

under different data conditions (Malkewitz et al., 2023).

Internal structure is explored through exploratory factor analysis, which first requires checking that the data are suitable and that the sample size is sufficient (Ferrando et al., 2022; Goretzko et al., 2021).

Each dimension of the scale includes one reverse-worded item. Scales with items worded in both directions may exhibit wording effects, because some respondents respond inconsistently to the positive and negative items of the same dimension (Steinmann et al., 2022), and identifying these responses may reduce such effects (García-Batista et al., 2021). Given the cross-sectional design, the relationships between dimensions should be understood as associations rather than dependency relationships.

METHODOLOGY

DESIGN

We conducted an instrumental, quantitative, non-experimental, cross-sectional study with a descriptive and exploratory scope. The data come from survey LEV-0019, "Mazatlán Pilot · Identity and Traditional Architecture," of project FZ-HAB-0014 on the Factoriza UAS platform, and from the frozen dataset DST-0021, with a cut-off date of 9 October 2026. The survey is an independent sample and the only one in the project.

POPULATION, SAMPLE, AND DATA CUTOFF

The population was defined as individuals aged 18 years or older residing in Mazatlán, Sinaloa, and data collection was conducted in the Historic Center and in older neighborhoods selected by the project lead. Sampling was therefore nonprobabilistic. According to the Factoriza log, 32 individuals opened the questionnaire and 9 completed it; no cases were excluded on quality-control grounds, so 9 cases were analyzed (Table 2).

The analyzed data cut is preliminary: it comprises 9 cases out of a target of 100, and data collection was still open and in the field at the cut-off date. With 9 cases for 10 items, the ratio is 0.9 cases per item, so the inter-item correlation matrix is not invertible. The adequacy of the data and the sample is the first condition that the methodological literature asks researchers to verify in item factor analysis (Ferrando et al., 2022; Goretzko et al., 2021).

INSTRUMENT

The Place Identity and Appreciation of Traditional Architecture Scale was administered. It consists of ten items with a five-point response format, ranging from Strongly disagree (1) to Strongly agree (5), organized into two dimensions of five items each: Mazatlán Identity (R1 to R5) and Appreciation of Traditional Architecture (R6 to R10). Two items, R4 and R9, are reverse-worded and have been recoded in the data matrix, so that a higher score indicates greater identification with the city and greater appreciation of traditional architecture. Table 1 presents the code, dimension, wording, and direction of each item.

Table 1. Structure of the instrument.

Code	Dimension	Item	Reverse
R1	Mazatlán identity	Being Mazatlecan is an important part of who I am	No
R2	Mazatlán identity	I identify with the customs of Mazatlán	No
R3	Mazatlán identity	I am proud to live in Mazatlán	No
R4	Mazatlán identity	To me, Mazatlán is a place like any other	Yes
R5	Mazatlán identity	When I am away from Mazatlán, I miss the city	No
R6	Appreciation of traditional architecture	The old houses of Mazatlán are part of the city's identity	No
R7	Appreciation of traditional architecture	Old houses with high ceilings feel cool	No
R8	Appreciation of traditional architecture	The porches of old houses are pleasant places to spend time	No

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

Code	Dimension	Item	Reverse
R9	Appreciation of traditional architecture	I prefer new buildings to the old houses of Mazatlán	Yes
R10	Appreciation of traditional architecture	I would like new houses to retain elements of old houses	No

Note. Place Identity and Appreciation of Traditional Architecture Scale. Five-point response scale (Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree). Reverse-scored items have already been recoded in the data matrix provided. Source: Factoriza UAS, project FZ-HAB-0014, survey LEV-0019, dataset DST-0021.

PROCEDURE

Responses were collected through the survey questionnaire administered on Factoriza UAS, which records explicit online informed consent before the first item and does not collect identifying data. Factoriza froze dataset DST-0021 with a cryptographic hash, generated the data matrix with reverse-scored items recoded, and produced the descriptive, internal-consistency, and within-dimension correlation analyses (runs RUN-00109 to RUN-00113). The complementary analyses were performed using the data file and the item dictionary exported from the platform.

DATA ANALYSIS

In the first stage, Factoriza UAS computed the mean, standard deviation, skewness, kurtosis, and percentage of responses at the extreme values of each item; the internal consistency of each dimension using Cronbach's alpha (Cronbach, 1951), with the corrected item-total correlation and alpha if item deleted; and the Pearson correlations between the items of each dimension, with 95% confidence intervals obtained through the Fisher transformation.

In a second stage, the program analisis_psicometrico.py, version 1.0, was run in Python 3.13.16 (Python Software Foundation, 2026), using NumPy 2.5.3 (Harris et al., 2020), SciPy 1.18.1 (Virtanen et al., 2020) and pandas 3.0.5. The program applies fixed, stated procedures, with no manual intervention in the calculations.

The program estimated McDonald's omega total (McDonald, 1999/2013) for each dimension from a one-factor model, without reversing items. It also attempted an exploratory factor analysis of the ten items, with an assessment of sampling adequacy, a test of sphericity, parallel analysis to determine the number of factors, minimum residual extraction and oblimin rotation. Finally, it estimated the relationship between the mean scores of the two dimensions using Spearman's coefficient and its 95% confidence interval, computed through the Fisher transformation with the standard error of Bonett and Wright (2000).

Reference values for psychometric indices are treated as guidelines rather than as decision rules (Ferrando et al., 2022). No items were removed, and no confirmatory factor analysis was conducted; this is left for future work.

ETHICAL CONSIDERATIONS

Participation was voluntary and anonymous. Factoriza UAS records explicit online informed consent and does not collect names, email addresses or any other identifying data.

STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

The following were used in preparing this manuscript: the Factoriza UAS platform, for data management and the descriptive, internal consistency and inter-item correlation analyses; a Python analysis program with fixed and validated procedures, for omega, the attempted exploratory factor analysis and the correlation between dimensions; and the Claude Opus language model (Anthropic), to run that program, assist with literature searching, write a draft and assemble the document from the results. The authors reviewed, corrected and approved the entire text, verified every reference and assume full responsibility for the content of the article.

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

RESULTS

SAMPLE COMPOSITION

Table 2 summarizes the case flow. Of the 32 individuals who opened the questionnaire, 9 completed it and were analyzed, with no exclusions for quality control. All 9 analyzed cases answered the ten items.

Table 2. Sample composition.

Indicator	Value
Individuals who opened the questionnaire	32
Completed questionnaires	9
Cases excluded by quality control	0
Cases analyzed	9
Items	10

Note. Survey "Piloto Mazatlán · Identidad y arquitecturatradicional" (LEV-0019); population: persons aged 18 years or older residing in Mazatlán; area: Mazatlán, Sinaloa, in the Historic Center and older neighborhoods selected by the project lead. Dataset DST-0021, fingerprint 1d050ecbfc8a566c. Source: Factoriza UAS. Preliminary data cut: n = 9 of a target of 100, with the survey still open.

MAZATLÁN IDENTITY AND APPRECIATION OF TRADITIONAL ARCHITECTURE

Table 3 and Figure 1 present the descriptive statistics. For *M*azatlán identity, the centrality of being from Mazatlán to one's self-definition had the highest mean (R1: M = 3.89, *SD* = 1.17), with a marked negative skewness (-2.16) and a kurtosis of 5.94, indicating that responses were concentrated at the high end of the scale.

In its recoded version, the perception that Mazatlán is not a place like any other obtained *M* = 3.33 (R4: *SD* = 1.22). Identification with local customs, pride in living in the city, and longing when away shared a mean of 3.22 (R2: *SD* = 1.48; R3: *SD* = 1.30; R5: *SD* = 1.56), with considerable dispersion.

In Appreciation of traditional architecture, the desire for new houses to retain elements of old ones had the highest mean (R10: *M* = 3.89, *SD* = 0.93), followed by the view of old houses as part of the city's identity (R6: *M* = 3.67, *SD* = 1.58) and the coolness of high-ceilinged houses (R7: *M* = 3.67, *SD* = 1.32); the appeal of porches ranked somewhat lower (R8: *M* = 3.33, *SD* = 1.12).

Preference for new buildings, in its recoded version, had the lowest mean on the instrument (R9: *M* = 2.56, *SD* = 0.73), indicating a tendency to favor new buildings over old houses. Overall, this cross-section describes residents who recognize the symbolic and climatic value of traditional architecture and want new housing to incorporate its elements, but who, given the choice, lean toward new buildings.

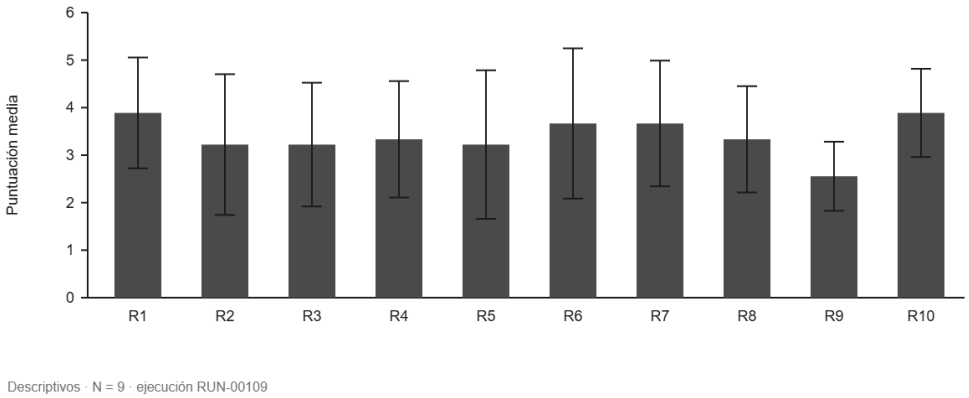
Table 3. Descriptive statistics of the items.

Item	M	SD	Skewness	Kurtosis	Floor	Ceiling
R1	3.89	1.17	-2.16	5.94	11%	22%
R2	3.22	1.48	-0.48	-0.71	22%	22%
R3	3.22	1.30	-0.52	-0.81	11%	11%
R4	3.33	1.22	-0.82	0.35	11%	11%
R5	3.22	1.56	-0.47	-1.34	22%	22%
R6	3.67	1.58	-1.25	0.17	22%	33%
R7	3.67	1.32	-0.88	0.73	11%	33%
R8	3.33	1.12	-0.84	1.94	11%	11%
R9	2.56	0.73	-1.50	1.47	11%	67%
R10	3.89	0.93	-0.94	1.35	11%	22%

Note.N = 9. Floor and ceiling indicate the percentage of responses at the minimum and maximum values. The item–total correlation column from the Factoriza descriptive table is omitted; its values do not match those in Table 4 because they are not calculated from the total of each dimension. Factoriza UAS run RUN-00109. Preliminary cut-off: n = 9 out of a target of 100, with data collection still open.

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

Figure 1. Mean scores per item with error bars representing one standard deviation.



INTERNAL CONSISTENCY

Table 4 presents the item analysis by dimension computed with Factoriza, and Table 5 shows the coefficients from the complementary program, whose alpha values match those obtained with Factoriza. The Mazatlán identity dimension showed high internal consistency (α = .871; ω = .884).

Pride in living in the city (R3: .852), identification with its customs (R2: .835) and nostalgia (R5: .821) were the most coherent items, whereas the recoded perception of Mazatlán as a distinct place showed a weaker relationship (R4: .357); removing this item would raise alpha to .915. The highest correlation in the dimension was between pride and nostalgia (R3 and R5: r = .894, 95% CI [.566, .978], p = .001), and none of the correlations involving R4 had an interval that excluded zero.

Appreciation of traditional architecture also showed high internal consistency (α = .873; ω = .887). The perception of old houses as part of the city's identity was the most consistent item (R6: .958), followed by the desire to preserve their elements in new housing (R10: .858) and the coolness of high ceilings (R7: .813); fondness for porticoes showed a somewhat weaker relationship (R8: .635).

The recoded preference for new buildings was the least consistent item (R9: .355), and its removal would raise alpha to .910. The highest correlation was between the heritage identity of the houses and the desire to preserve their elements (R6 and R10: r = .909, 95% CI [.617, .981], p < .001), followed by the correlation between that identity and the coolness of high ceilings (R6 and R7: r = .837, 95% CI [.388, .965], p = .005) and by that between high ceilings and porticoes (R7 and R8: r = .761, 95% CI [.195, .947], p = .017).

Table 4. Item analysis by dimension.

Dimension	Item	Corrected item-total r	α if item deleted
Identity	R1	.666	.853
Identity	R2	.835	.808
Identity	R3	.852	.807
Identity	R4	.357	.915
Identity	R5	.821	.812
Architecture	R6	.958	.777
Architecture	R7	.813	.817
Architecture	R8	.635	.862
Architecture	R9	.355	.910
Architecture	R10	.858	.821

Note.N = 9. Scale from 1 to 5; reverse-scored items R4 and R9 are shown recoded. Run RUN-00109 of Factoriza UAS. Preliminary data cut: n = 9 out of a target of 100, with data collection still open.

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

Table 5. Internal consistency by dimension.

Dimension	Items	n	α	ω	Remarks
Mazatlán identity	5	9	.871	.884	
Appreciation of traditional architecture	5	9	.873	.887	

Note.N = 9. Identity = Mazatlán identity; Architecture = Appreciation of traditional architecture. The corrected item-total correlation excludes the item itself from the total of its dimension. Cronbach's α for each complete dimension, with 5 items each: Identity = .871 (run RUN-00110); Architecture = .873 (RUN-00112). Source: Factoriza UAS, Tables 4 and 6 of the package, combined without modifying values. Preliminary data cut: n = 9 out of a target of 100, with data collection still open.

Tables 6 and 7 present all the correlations between the items within each dimension. In Mazatlán Identity, the six correlations among R1, R2, R3 and R5 ranged from .632 to .894, and five of them had intervals that excluded zero; by contrast, none of the correlations involving R4 did. In Appreciation of Traditional Architecture, R9 was weakly related to high ceilings (r = .217) and negatively related to porticoes (r = -.103), although its correlation with the desire to preserve old elements was moderate and close to significance (R9 and R10: r = .659, 95% CI [-.009, .920], p = .053).

Table 6. Correlations between the Mazatlán Identity items.

Variable pair	r	IC 95%	p
R1 and R2	.739	[.148, .941]	.023
R1 and R3	.759	[.191, .946]	.018
R1 and R4	.029	[-.648, .680]	.941
R1 and R5	.632	[-.055, .913]	.068
R2 and R3	.749	[.169, .944]	.020
R2 and R4	.505	[-.239, .876]	.165
R2 and R5	.678	[.025, .925]	.045
R3 and R4	.261	[-.487, .789]	.497
R3 and R5	.894	[.566, .978]	.001
R4 and R5	.413	[-.346, .845]	.269

Note.α = Cronbach's alpha; ω = McDonald's omega total based on a one-factor minimum residual model, without reverse-scoring items. Complete cases per dimension. Source: Prepared by the authors using analisis_psicometrico.py 1.0 (Python 3.13.16), dataset DST-0021_FZ_HAB_0014. Preliminary data cut: n = 9 out of a target of 100, with data collection still open.

Table 7. Correlations among the items of the Assessment of Traditional Architecture.

Variable pair	r	IC 95%	p
R6 and R7	.837	[.388, .965]	.005
R6 and R8	.707	[.081, .933]	.033
R6 and R9	.508	[-.236, .876]	.163
R6 and R10	.909	[.617, .981]	< .001
R7 and R8	.761	[.195, .947]	.017
R7 and R9	.217	[-.523, .770]	.575
R7 and R10	.679	[.027, .926]	.044
R8 and R9	-.103	[-.718, .603]	.793
R8 and R10	.522	[-.217, .881]	.149
R9 and R10	.659	[-.009, .920]	.053

Note.N = 9. Pearson correlation. Confidence intervals were obtained using Fisher's z transformation. Cross-sectional design: the reported relationships are associations. Run RUN-00111 of Factoriza UAS. Preliminary cutoff: n = 9 of a target of 100, with data collection still open.

INTERNAL STRUCTURE AND RELATIONSHIP BETWEEN DIMENSIONS

The planned exploratory factor analysis could not be estimated in an interpretable manner, and its results are not presented in tables. With 9 cases and 10 items, the correlation matrix is not invertible, so the measure of sampling adequacy and the test of sphericity could not be

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

computed. Parallel analysis suggested one factor, which explained 61.88 % of the variance in the software's solution, but with fewer cases than items, that solution has no basis. These results are recorded in the reproducibility appendix, but they provide no evidence about the dimensionality of the instrument.

With 9 cases, the Spearman correlation between the mean scores for Mazatlán Identity and Appreciation of Traditional Architecture was positive and high, $\rho = .723$, 95% CI [.016, .948], $p = .028$. The interval, calculated using the standard error of Bonett and Wright (2000), excluded zero by a very narrow margin, so the magnitude of the relationship is highly uncertain. Because the analysis involves only one pair of dimensions, the result is reported in the text rather than in a table.

DISCUSSION OF RESULTS

This study examined the preliminary psychometric properties of the place identity and traditional architecture appraisal scale in Mazatlán. Both dimensions showed high internal consistency, with alpha and omega values ranging from .871 to .887.

With 9 cases, however, these coefficients are highly unstable: the simulation literature on alpha and omega has used much larger samples (Malkewitz et al., 2023), and the internal structure could not be estimated. The results should be read as an initial favorable signal that the final data collection will need to confirm.

In both dimensions, the reverse-worded item was the least consistent, and in both, its removal would raise alpha above .90. This pattern is consistent with a wording effect, documented in scales with items keyed in both directions (García-Batista et al., 2021; Steinmann et al., 2022), but it also allows for a content-based explanation.

The statement that Mazatlán is a place like any other is a comparative claim and does not amount to a lack of identity, just as preferring new buildings does not amount to rejecting traditional architecture: it may reflect considerations of maintenance, cost or comfort that are not part of the symbolic and climatic appraisal captured by the other items. The moderate correlation between R9 and the desire for new houses to retain old elements suggests that residents do not see the two as opposed.

The descriptive profile of traditional architecture is consistent with the literature. The appreciation of the coolness provided by high ceilings and porches, and its association with the view of old houses as part of the city's identity, are in line with evidence that traditional housing elements in tropical climates moderate heat gains (Arminda and Darmayanti, 2026) and with proposals to recover bioclimatic strategies in historic buildings in Mexico (Aguilar Osante et al., 2026).

That residents want new housing to retain these elements is relevant to a region whose social housing has been described as hot (Barraza-Bracamontes et al., 2022). These parallels are descriptive: the study did not measure the temperature or type of the dwellings.

The positive relationship between identification with the city and appreciation of its traditional architecture is consistent with the association between place attachment and local characteristics that express history and culture (Kamani Fard and Paydar, 2024), and with the link between experiencing historic buildings and attachment at heritage sites (Cai et al., 2025).

With 9 cases and an interval that nearly touches zero, the magnitude of this relationship cannot yet be established. Nor can we rule out that it reflects a generally favorable appraisal of the city, which would appear in both dimensions, or the selection of residents from the Historic Center and older neighborhoods, whose bond with traditional architecture may be stronger than that of the rest of the population.

In the context of the touristification of the Historic Center (Castillo Romero, 2023; Mendieta Vega and Roldán Clarà, 2024), residents' identity and their appreciation of heritage are conservation resources that should be measured with robust instruments.

CONCLUSIONS

The study achieved its objective to the extent allowed by a preliminary sample of 9 cases. In the Mazatlán pilot survey, the scale of place identity and appreciation of traditional architecture showed high internal consistency for Mazatlán Identity ($\alpha = .871$; $\omega = .884$) and for Appreciation of Traditional Architecture ($\alpha = .873$; $\omega = .887$); the reverse-scored items were the least coherent in each dimension.

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

The exploratory factor analysis could not be estimated interpretably because the sample had fewer cases than items. The two dimensions were positively correlated, with a very wide interval. Residents recognized the identity-related and climatic value of traditional architecture and wanted new housing to retain its elements, although they tended to prefer new buildings.

The limitations are substantial. The sample of 9 cases, against a target of 100 (0.9 cases per item), precludes estimation of the internal structure and makes all statistics unstable; data collection was still ongoing, and of the 32 people who opened the questionnaire, only 9 completed it.

The neighborhoods were selected by the project lead, and no information is available on the respondents, their length of residence, or the type of housing they live in. The study did not measure the thermal conditions of the dwellings; its findings refer only to perception. The cross-sectional design precludes establishing dependence relationships, and no confirmatory factor analysis was performed.

Decisions for the authors follow from these results. The first is to review the wording of the reverse-scored items, R4 and R9, and to decide whether they should be retained, reworded or treated as indicators of distinct facets, such as housing preference. The second is to document the origin of the items and the content review.

The third is to record length of residence, place of birth and type of dwelling, because identity and the valuation of heritage may vary with these factors. The fourth is to extend the survey to neighborhoods other than the Historic Center so that the sample is not concentrated among residents living close to traditional architecture. None of these decisions was made in the present analysis, which retains the ten original items.

For future research, we propose completing the survey up to the planned target, repeating the exploratory factor analysis once the number of cases allows it, and then evaluating the resulting structure through confirmatory factor analysis in an independent sample. Combining the scale with thermal measurements in old and new houses would make it possible to compare perceived coolness with measured coolness. An instrument with documented validity evidence could support conservation policies for the Historic Center of Mazatlán and guide the design of new housing toward climate adaptation solutions that residents recognize and value.

https://doi.org/10.62486/978-9915-9966-6-0.Ch06

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