Chapter 9 / Capítulo 9

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.Ch09
Pages: 114-127

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Habitability and gender. Women's psychoenvironmental experience of housing in southern Sinaloa: Preliminary psychometric properties of a scale

Habitabilidad y género. Experiencia psicoambiental de la mujer en la vivienda del sur de Sinaloa: propiedades psicométricas preliminares de una escala

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ABSTRACT

Women and men do not experience housing in the same way, and a gender perspective remains scarce in habitability research. This instrumental, cross-sectional and exploratory study examined the preliminary psychometric properties of the Women's Housing Experience Scale, a fifteen-item instrument with three dimensions: own space, safety and well-being in the dwelling. The preliminary cut of the pilot survey of project FZ-HAB-0019 of the Factoriza UAS platform was analyzed, with 14 women aged 18 or older living in southern Sinaloa, Mexico, out of a target of 100. Descriptive statistics, Cronbach's alpha, McDonald's omega, inter-item correlations and Spearman correlations between dimensions were computed; exploratory factor analysis was not interpretable because the sample was smaller than the number of items. Item means ranged from 3.50 to 4.57. Internal consistency was acceptable for own space (α = .777; ω = .785), moderate for safety (α = .690; ω = .804) and low according to alpha for well-being (α = .593; ω = .720). The three reverse-worded items and the item on feeling calm at home were the least coherent with their dimensions. The dimensions were positively correlated (ρ between .585 and .790). The results are provisional and guide the revision of the instrument before the final data cut.

Keywords: gender; housing habitability; women's safety; psychometric evidence

RESUMEN

La vivienda no se experimenta igual por mujeres y hombres, y la perspectiva de género sigue siendo escasa en los estudios de habitabilidad. Este estudio instrumental, transversal y exploratorio examinó las propiedades psicométricas preliminares de la Escala de experiencia de las mujeres en la vivienda, de quince reactivos en tres dimensiones: Espacio propio, Seguridad y Bienestar en la vivienda. Se analizó el corte preliminar del levantamiento piloto del proyecto FZ-HAB-0019 de Factoriza UAS, con 14 mujeres de 18 años o más residentes en el sur de Sinaloa, de una meta de 100. Se calcularon estadísticos descriptivos, alfa de Cronbach, omega de McDonald, correlaciones entre reactivos y correlaciones de Spearman entre dimensiones; el análisis factorial exploratorio no fue interpretable porque la muestra fue menor que el número de reactivos. Las medias se situaron entre 3.50 y 4.57. La consistencia interna fue aceptable en Espacio propio (α = .777; ω = .785), moderada en Seguridad (α = .690; ω = .804) y baja según el alfa en Bienestar (α = .593; ω = .720). Los tres reactivos inversos y el reactivo sobre la tranquilidad en la vivienda fueron los menos coherentes con su dimensión. Las dimensiones se correlacionaron positivamente entre sí (ρ entre .585 y .790). Los resultados son provisionales y orientan la revisión del instrumento antes del corte final.

Palabras clave: género; habitabilidad de la vivienda; seguridad de las mujeres; evidencias psicométricas

INTRODUCTION

Housing is not experienced in the same way by all the people who live in it. Gender relations are produced and reproduced within the domestic sphere, such that the distribution of space, time and tasks in the household, as well as the sense of safety in the home and its immediate surroundings, may differ between women and men.

A critical review of the literature on housing and health found that, overall, the consequences of housing conditions were worse for women and for non-binary or trans people, but that very few studies incorporate a gender perspective; the authors therefore considered it urgent to establish an interdisciplinary agenda on this relationship (Vásquez-Vera et al., 2022).

In Mexico, housing policy in the first decades of this century favored the mass production of social housing, characterized by small dwellings, developments located far from urban centers, and insufficient services (Hernández Ilizaliturri et al., 2025).

In a habitability study of housing developments in Mérida, Torres Pérez (2023) argued that standardized minimum housing was designed around a male user. The study documented how women, in their role as homemakers, reorganize indoor and outdoor space to meet family needs and generate income, and how they are more concerned than men about noise, visibility and privacy. In the hot climates of the northwest, thermal comfort becomes an additional requirement: in Culiacán, residents of a social housing development described their homes as very hot (Barraza-Bracamontes et al., 2022).

Safety is a central dimension of that experience. According to the 2021 National Survey on the Dynamics of Household Relationships, 70.1% of women aged 15 years and older had experienced at least one incident of violence over their lifetime, and 11.4% had experienced violence in the family setting in the previous 12 months (Instituto Nacional de Estadística y Geografía [INEGI], 2022).

Outside the home, women's perceived insecurity in public space is associated with personal, social, environmental and temporal factors, such as the difference between day and night (te Braak and van Tienoven, 2025). For women, therefore, the home can be both a refuge and a place of surveillance or risk; the route from the street to the front door is also part of their residential experience.

Despite the relevance of the topic, instruments that specifically measure women's psycho-environmental experience in their homes are scarce; the search conducted for this study did not identify any previous instruments developed for this purpose in southern Sinaloa. A brief scale capturing the personal space, safety and well-being that women experience in their homes would allow a gender perspective to be incorporated into housing habitability studies in the region, provided that the scale shows evidence of validity and acceptable internal consistency.

Project FZ-HAB-0019 of the Factoriza UAS platform set out to study women's psycho-environmental experience of housing in southern Sinaloa. To this end, the Women's Housing Experience Scale was designed, comprising fifteen items organized into three dimensions: Own Space in the Home, Safety within the Home, and Well-being in the Home.

This article presents the results of the first preliminary data cut of the pilot survey. The general objective is to examine the preliminary psychometric properties of the scale. The specific objectives are to describe participants' responses to the items; to estimate the internal consistency of each dimension using alpha and omega coefficients; to explore the internal structure of the scale; and to estimate the relationship between the scores on the three dimensions.

DEVELOPMENT

GENDER, HOUSING, AND THE EXPERIENCE OF HOME

The literature distinguishes between housing as a material object and home as an experience. Keynejad et al. (2026) proposed a framework that spans a continuum from housing, as its most concrete manifestation, through the symbolic representations of home, to the psychological experience of belonging to a place.

Within this framework, housing insecurity erodes community, relationships and safety, and is accompanied by an ontological insecurity associated with greater vulnerability to interpersonal violence. The authors further propose that these dynamics are bidirectional and that mental health and housing conditions are mutually reinforcing. They therefore advocated gender-sensitive interventions that expand access to safe and stable housing.

https://doi.org/10.62486/978-9915-9966-6-0.Ch09

The review by Vásquez-Vera et al. (2022) helps situate this proposal within the empirical evidence. Of the 90 articles analyzed in full text, most examined the affordability and physical conditions of housing, and only a subset adopted a feminist or gender-sensitive perspective; the remaining studies merely compared outcomes by sex or did not include a gender perspective.

This scarcity justifies the development of instruments that, rather than comparing women and men, describe how women experience their own housing.

ONE'S OWN SPACE WITHIN THE HOME

Having a space of one's own, being able to make decisions about how the household is organized, and having the opportunity to rest alone are aspects of the domestic experience that depend as much on the size of the dwelling as on the distribution of power within the household.

In Hong Kong, a study of 413 female caregivers living in subdivided units found that a total floor area of less than 13.0 m^2 was associated with a higher likelihood of anxiety and depression and with lower health-related quality of life. The study also found that crowding was related to well-being through the physical, relational and personal aspects of the home experience, including exhaustion from domestic work, family conflict and feelings of repression (Chan et al., 2024).

In Beijing, among 1,613 residents, residential crowding was associated with a higher risk of depression through stress specific to the living space; women were among the subgroups with a relatively stronger association (Wang and Liu, 2023).

In Mexican social housing, Torres Pérez (2023) observed that women adapted to small dwellings and that, in some cases, the bathroom was the only private space for the couple.

These observations support the inclusion of items in the project scale on having a space that feels like one's own, the ability to decide how the home is arranged, the existence of a place to rest alone, and the possibility of carrying out personal activities, as well as a reverse-scored item that asks whether one's own needs take second place.

SAFETY IN AND AROUND THE HOME

The systematic review by te Braak and van Tienoven (2025), which included 50 studies published between 2002 and 2024, proposed a framework in which women's perceived safety in urban public space results from the interaction of personal, social, environmental, and temporal factors.

In addition to gender, factors related to this perception included age, socioeconomic status, social cohesion, urban design, and environmental maintenance, as well as the time of day. In a rural setting in Colima, women identified ten types of insecurity, including gender-based violence, lack of street lighting, and lack of surveillance, and reported that the absence of light forced them to return home earlier (Valladares Anguiano et al., 2018).

This study, which predates the five-year period prioritized in the search, is included because it is one of the few empirical precedents from the Mexican Pacific region.

Within the dwelling, safety also depends on household relationships. In the housing complexes of Mérida, about half of the women reported feeling safe in their homes; among those who did not, some attributed their insecurity to the external environment and others to their partner (Torres Pérez, 2023).

National data on family violence (INEGI, 2022) indicate that the home is not a protected space for all women. Therefore, the safety dimension of the scale combines items on safety inside the home and when arriving home at night, the reassurance provided by door locks, and trust in the street, with one reverse-scored item on the feeling of being watched inside the home.

WELL-BEING IN THE HOME

The home can function as a restorative environment, that is, as a place where the psychological resources depleted by everyday life are recovered. In Israel, a study of Arab and Jewish women that applied the Perceived Restorativeness Scale across four environments, including the home, found between-group differences in the restoration experienced at home and in the residential environment; social discomfort was the intervening variable most strongly associated with restoration (Saadi et al., 2021).

For women who take on most of the domestic work, however, the home is also a workplace;

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exhaustion from household chores has been documented as one of the pathways through which housing conditions are related to their well-being (Chan et al., 2024).

Residential satisfaction and well-being in the home are also related to the community environment. In Yangpu District, Shanghai, a study based on 923 valid questionnaires across 36 communities found that the built environment of community facilities was associated with the perception that the neighborhood considers women's needs and with residential satisfaction, particularly for recreational facilities. The same study found that the direct relationship between this perception and satisfaction was weak and that subjective perception mediated the relationship between the built environment and satisfaction (Fang et al., 2025).

In the suburbs of the same city, proximity to outdoor facilities and lower noise pollution were associated with better self-reported mental health in both women and men, whereas other associations, such as that involving the distance between workplace and residence, were observed only in men (Shen et al., 2021).

More broadly, the review by Saleem and Alchalabi (2025) grouped the factors associated with residential satisfaction into interacting categories, ranging from functional and technical to psychological and public policy factors.

VALIDITY EVIDENCE IN THE INITIAL STAGE OF SCALE DEVELOPMENT

The internal consistency of a dimension is usually estimated using Cronbach's alpha (Cronbach, 1951), which assumes equivalent loadings across items, and McDonald's omega (McDonald, 1999/2013), which does not; simulation studies have compared the performance of both coefficients under different data conditions (Malkewitz et al., 2023).

Internal structure is explored through exploratory factor analysis, which first requires verifying the adequacy of the data and a sufficient sample size; current recommendations for this analysis call for treating cutoff values as guidelines rather than rules (Ferrando et al., 2022; Goretzko et al., 2021).

Scales with items keyed in both directions may show wording effects, because some respondents answer the positively and negatively worded items of the same dimension inconsistently (Steinmann et al., 2022). Identifying these responses can reduce such effects (García-Batista et al., 2021). The project's scale includes one reverse-keyed item in each dimension, so this aspect should be examined from the first administration.

METHODOLOGY

DESIGN

An instrumental, quantitative, non-experimental, cross-sectional study was carried out with a descriptive and exploratory scope. The data correspond to the survey LEV-0024, "Southern Pilot of Sinaloa - Women and Housing", of the FZ-HAB-0019 project of the Factoriza UAS platform, and to the frozen dataset DST-0024, with a cut-off date of October 9, 2026. The survey constitutes an independent sample and is the only one of the project.

POPULATION, SAMPLE, AND DATA CUTOFF

The population was defined as women aged 18 years or older residing in southern Sinaloa. Data collection took place in localities selected by the project lead. According to the Factoriza log, 40 individuals opened the questionnaire and 14 completed it; no cases were excluded on quality-control grounds, so 14 cases were analyzed (Table 2).

The data cut analyzed here is preliminary: it comprises 14 cases out of a target of 100, and data collection was still open and in the field at the cut-off date. With 14 cases for 15 items, the ratio is 0.9 cases per item, so the correlation matrix among the fifteen items is not invertible. The adequacy of the data and of 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).

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INSTRUMENT

The Women's Housing Experience Scale was administered. It comprises fifteen items with a five-point response format, ranging from Strongly disagree (1) to Strongly agree (5), organized into three dimensions of five items each: Own Space in the Home (R1 to R5), Safety within the Home (R6 to R10), and Well-being in the Home (R11 to R15). Three items (R4, R9, and R13) are reverse-worded and have already been recoded in the data matrix, so that a higher score indicates a more favorable experience across all three dimensions. Table 1 presents the code, dimension, wording, and direction of each item.

Table 1. Structure of the instrument.

Code	Dimension	Item	Reverse-scored
R1	Personal space	In my home, I have a space that I feel is my own	No
R2	Personal space	I can decide how the spaces in my home are arranged	No
R3	Personal space	In my home, I have a place to rest alone	No
R4	Personal space	In my home, my needs take a back seat	Yes
R5	Personal space	I can carry out my personal activities within my home	No
R6	Safety	I feel safe inside my home	No
R7	Safety	I feel safe when I arrive home at night	No
R8	Safety	My home has locks that give me peace of mind	No
R9	Safety	I feel watched in my home	Yes
R10	Safety	The street where I live makes me feel safe when I leave my home	No
R11	Well-being	I feel calm in my home	No
R12	Well-being	My home is a place where I recharge my energy	No
R13	Well-being	When I am at home, I feel tired	Yes
R14	Well-being	I feel happy with the home I live in	No
R15	Well-being	My home makes me feel at peace	No

Note. Women's Housing Experience Scale. Own Space = Own space in the home; Safety = Safety within the home; Well-being = Well-being in the home. Responses were given on a 5-point scale (Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree). Reverse-scored items have already been recoded in the delivered data matrix. Source: Factoriza UAS, project FZ-HAB-0019, survey LEV-0024, dataset DST-0024.

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-0024 with a cryptographic hash, generated the data matrix with the reverse-scored items recoded, and produced the descriptive, internal consistency, and within-dimension correlation analyses (runs RUN-00126 to RUN-00132). 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 calculated the mean, standard deviation, skewness, kurtosis and the percentages of responses at the extreme values for each item; the internal consistency of each dimension using Cronbach's alpha (Cronbach, 1951), with the corrected item-total correlation and the alpha if item deleted; and the Pearson correlations among the items of each dimension, with 95% confidence intervals obtained by Fisher's transformation.

In a second stage, the program analisis_psicometrico.py, version 1.0, was run in Python 3.13.16 (Python Software Foundation, 2026), with 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, explicitly 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 fifteen items, including sampling adequacy, a test of sphericity, the number of factors

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determined by parallel analysis with 100 simulations, minimum residual extraction, and oblimin rotation. Finally, it estimated the relationship between the mean scores of the three dimensions using Spearman's coefficient and its 95% confidence interval, obtained through the Fisher transformation with the standard error of Bonett and Wright (2000).

The reference values for the psychometric indices are treated as guidelines rather than as decision rules (Ferrando et al., 2022). No items were removed. Confirmatory factor analysis was not conducted and is proposed as future work.

ETHICAL CONSIDERATIONS

Participation was voluntary and anonymous. Factoriza UAS records express informed consent online and does not collect names, email addresses or any other identifying data. Because the scale explores safety within the home and the feeling of being watched, the protocol should provide participants with guidance on support services if administration of the scale evokes situations of violence.

STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

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

RESULTS

SAMPLE COMPOSITION

Table 2 summarizes the case flow. Of the 40 individuals who opened the questionnaire, 14 completed it and were analyzed, with no exclusions for quality control. The 14 analyzed cases answered all fifteen items.

Table 2. Sample composition.

Indicator	Value
People who opened the questionnaire	40
Completed questionnaires	14
Cases excluded by quality control	0
Cases analyzed	14
Items	15

Note. Survey "Southern Sinaloa Pilot · Women and Housing" (LEV-0024); population: women aged 18 years or older residing in southern Sinaloa; territory: southern Sinaloa, in localities selected by the project lead. Dataset DST-0024, fingerprint 1cac45b14364e4c1. Source: Factoriza UAS. Preliminary cut-off: n = 14 of a target of 100, with data collection ongoing.

PERSONAL SPACE, SAFETY, AND WELL-BEING IN THE HOME

Table 3 and Figure 1 present the descriptive statistics. The means of the fifteen items ranged from 3.50 to 4.57, above the midpoint of the scale, and most items showed negative skewness, indicating that responses were concentrated at the high values. In the Own space in the home dimension, being able to carry out personal activities at home had the highest mean (R5: M = 4.36, SD = 0.84), followed by the availability of a place to rest alone (R3: M = 4.29, SD = 1.07), whose skewness (-2.43) and kurtosis (7.25) were, together with those of R11, the most pronounced in the instrument.

Having a space that feels like one's own (R1: M = 4.07, SD = 1.21) and the recoded version of

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the reverse-scored item on one's own needs (R4: *M* = 4.07, *SD* = 0.73) had the same mean; the ability to decide how spaces are arranged had the lowest mean in the dimension (R2: *M* = 3.79, *SD* = 0.89).

In Safety inside the home, feeling safe inside the home had the highest mean and the lowest dispersion in the dimension (R6: *M* = 4.50, *SD* = 0.52), followed by the peace of mind provided by door locks (R8: *M* = 4.43, *SD* = 0.65) and by confidence on the street when leaving the home (R10: *M* = 4.14, *SD* = 0.95).

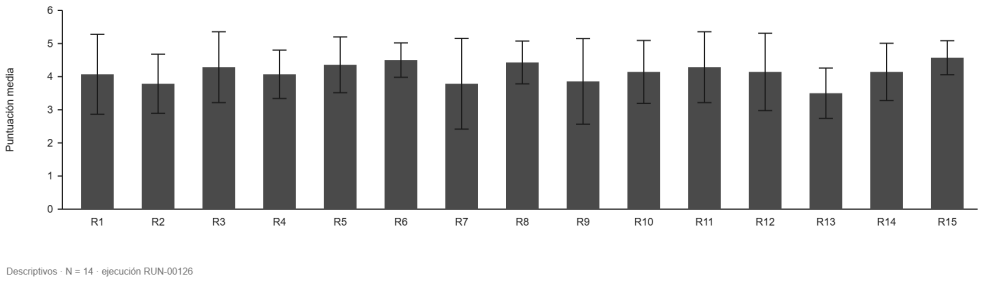
The feeling of not being watched, in the recoded version of the reverse-scored item (R9: *M* = 3.86, *SD* = 1.29), and feeling safe when arriving home at night (R7: *M* = 3.79, *SD* = 1.37) had the lowest means and the greatest dispersion in the dimension. In Well-being at home, feeling at peace at home had the highest mean of the entire instrument (R15: *M* = 4.57, *SD* = 0.51), followed by feeling calm (R11: *M* = 4.29, *SD* = 1.07); recovering energy at home and feeling content with the home shared a mean of 4.14 (R12: *SD* = 1.17; R14: *SD* = 0.86), whereas the recoded reverse-scored item on tiredness had the lowest mean of the entire instrument (R13: *M* = 3.50, *SD* = 0.76).

Table 3. Descriptive statistics of the items.

Item	M	SD	Skewness	Kurtosis	Floor	Ceiling
R1	4.07	1.21	-1.69	2.62	7%	43%
R2	3.79	0.89	-1.04	1.00	14%	14%
R3	4.29	1.07	-2.43	7.25	7%	50%
R4	4.07	0.73	-0.11	-0.86	21%	29%
R5	4.36	0.84	-1.73	3.99	7%	50%
R6	4.50	0.52	0.00	-2.36	50%	50%
R7	3.79	1.37	-1.23	0.76	14%	36%
R8	4.43	0.65	-0.69	-0.25	7%	50%
R9	3.86	1.29	-0.94	0.12	7%	43%
R10	4.14	0.95	-0.95	0.34	7%	43%
R11	4.29	1.07	-2.43	7.25	7%	50%
R12	4.14	1.17	-1.67	3.06	7%	50%
R13	3.50	0.76	0.00	0.16	7%	7%
R14	4.14	0.86	-0.31	-1.64	29%	43%
R15	4.57	0.51	-0.32	-2.24	43%	57%

Note.N = 14. 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 with respect to the total of each dimension. Factoriza UAS run RUN-00126. Preliminary data cut: n = 14 out of a target of 100, with data collection ongoing.

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



INTERNAL CONSISTENCY

Table 4 summarizes the item analysis by dimension computed with Factoriza, and Table 5 presents the coefficients from the complementary software, whose alpha values match those obtained with Factoriza. Personal space in the home had the highest alpha of the three dimensions (α = .777; ω = .785). Having a space of one's own (R1: .684), a place to rest alone (R3:

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.662) and engaging in personal activities (R5: .625) were the most consistent items, whereas the reverse-scored item on one's own needs showed the weakest relationship (R4: .312); removing this item would raise alpha to .800.

Safety within the home had an alpha of .690 and an omega of .804. The reassurance provided by locks was the most coherent item (R8: .808), followed by trust in the street (R10: .588), whereas the reverse-scored item on the feeling of being watched showed the weakest relationship (R9: .247); removing this item would raise alpha to .755. Well-being in the home had the lowest internal consistency according to alpha (α = .593), which differed appreciably from omega (ω = .720).

Feeling at peace (R15: .713) and recovering energy (R12: .669) were the most consistent items; tiredness, in its recoded version, showed a weak relationship (R13: .286), and feeling calm in the home was practically unrelated to the rest of the dimension (R11: .016), so removing this item would raise alpha to .733.

Table 4. Item analysis by dimension.

Dimension	Item	Corrected item-total r	α if item deleted
Own space	R1	.684	.688
Own space	R2	.504	.751
Own space	R3	.662	.695
Own space	R4	.312	.800
Own space	R5	.625	.716
Safety	R6	.503	.656
Safety	R7	.462	.652
Safety	R8	.808	.554
Safety	R9	.247	.755
Safety	R10	.588	.581
Well-being	R11	.016	.733
Well-being	R12	.669	.293
Well-being	R13	.286	.569
Well-being	R14	.379	.522
Well-being	R15	.713	.447

Note.N = 14. Scale of 1 to 5; reverse-scored items R4, R9, and R13 are shown recoded. Factoriza UAS run RUN-00126. Preliminary data cut: n = 14 out of a target of 100, with data collection still open.

Table 5. Internal consistency by dimension.

Dimension	Items	n	α	ω
Own space	5	14	.777	.785
Safety	5	14	.690	.804
Well-being	5	14	.593	.720

Note.N = 14. Own space = Own space in the home; Safety = Safety within the home; Well-being = Well-being in the home. The corrected item-total correlation excludes the item itself from the total of its dimension. Cronbach's α for each full dimension, with 5 items each: Own space = .777 (run RUN-00127); Safety = .690 (RUN-00129); Well-being = .593 (RUN-00131). Source: Factoriza UAS, Tables 4, 6, and 8 of the package, combined without modifying values. Preliminary cutoff: n = 14 of a target of 100, with data collection still open.

Table 6 presents all the correlations among the items within each dimension. In Own Space, the highest correlation was between having one's own space and having a place to rest alone (R1 and R3: r = .877, 95% CI [.649, .961], p < .001), followed by the correlation between the ability to decide on the arrangement of the space and carrying out personal activities (R2 and R5: r = .724, 95% CI [.314, .906], p = .003); none of the correlations involving R4 had an interval that excluded zero.

In Safety, the highest correlations were between the locks and trust in the street (R8 and R10: r = .770, 95% CI [.405, .923], p = .001), between the locks and safety inside the home (R6 and R8: r = .688, 95% CI [.248, .893], p = .007), and between the locks and safety when arriving at night (R7 and R8: r = .547, 95% CI [.023, .835], p = .043); none of the R9 correlations had an interval that excluded zero.

In Well-being, feeling at peace was associated with regaining energy (R12 and R15: r = .752, 95% CI [.368, .917], p = .002) and with feeling content with the dwelling (R14 and R15: r = .668, 95%

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CI [.213, .885], p = .009). The correlation between regaining energy and recoded tiredness was moderate, with an interval that included zero (R12 and R13: r = .521, 95% CI [-.014, .824], p = .056). The four correlations of R11 with the other items in the dimension ranged from -.095 to .100.

Table 6. Correlations between items within each dimension.

Dimension	Variable pair	r	IC 95%	p
Own space	R1 and R2	.301	[-.273, .717]	.296
Own space	R1 and R3	.877	[.649, .961]	< .001
Own space	R1 and R4	.256	[-.318, .692]	.378
Own space	R1 and R5	.427	[-.134, .781]	.128
Own space	R2 and R3	.230	[-.342, .678]	.428
Own space	R2 and R4	.379	[-.189, .758]	.181
Own space	R2 and R5	.724	[.314, .906]	.003
Own space	R3 and R4	.169	[-.397, .642]	.564
Own space	R3 and R5	.476	[-.073, .804]	.085
Own space	R4 and R5	.206	[-.365, .664]	.481
Safety	R6 and R7	.379	[-.190, .757]	.181
Safety	R6 and R8	.688	[.248, .893]	.007
Safety	R6 and R9	.115	[-.443, .608]	.696
Safety	R6 and R10	.469	[-.083, .800]	.091
Safety	R7 and R8	.547	[.023, .835]	.043
Safety	R7 and R9	.155	[-.409, .634]	.596
Safety	R7 and R10	.440	[-.118, .787]	.116
Safety	R8 and R9	.355	[-.216, .745]	.213
Safety	R8 and R10	.770	[.405, .923]	.001
Safety	R9 and R10	.206	[-.364, .664]	.480
Well-being	R11 and R12	.088	[-.464, .591]	.765
Well-being	R11 and R13	-.095	[-.595, .459]	.747
Well-being	R11 and R14	-.048	[-.564, .496]	.872
Well-being	R11 and R15	.100	[-.455, .599]	.734
Well-being	R12 and R13	.521	[-.014, .824]	.056
Well-being	R12 and R14	.436	[-.124, .785]	.119
Well-being	R12 and R15	.752	[.368, .917]	.002
Well-being	R13 and R14	.117	[-.441, .610]	.690
Well-being	R13 and R15	.197	[-.372, .659]	.499
Well-being	R14 and R15	.668	[.213, .885]	.009

Note.α = Cronbach's alpha; ω = McDonald's omega total based on a one-factor minimum residual model, without reverse-scoring items. Complete cases by dimension. Own space = Own space in the home; Safety = Safety within the home; Well-being = Well-being in the home. The observations column, empty for all three dimensions, is omitted. Source: Prepared by the authors using analisis_psicometrico.py 1.0 (Python 3.13.16), dataset DST-0024_FZ_HAB_0019. Preliminary data cut: n = 14 out of a target of 100, with data collection ongoing.

INTERNAL STRUCTURE AND RELATIONSHIP BETWEEN THE DIMENSIONS

The planned exploratory factor analysis could not be estimated in an interpretable manner, and its results are not presented in tables. With 14 cases and 15 items, the correlation matrix is not invertible, so the measure of sampling adequacy and the test of sphericity could not be computed. Parallel analysis suggested two factors, which in the software's solution explained 57.51% of the variance; however, that solution showed a Heywood case, with a communality greater than 1 for R3, and it is not tenable with fewer cases than items. These results are reported in the reproducibility appendix, but they provide no evidence on the dimensionality of the instrument.

Table 7 presents the Spearman correlations between the mean scores of the three dimensions. All three were positive, and their intervals excluded zero. The strongest relationship was between Safety and Well-being, ρ = .790, 95% CI [.375, .941], p < .001, followed by Own Space

https://doi.org/10.62486/978-9915-9966-6-0.Ch09

and Safety, ρ = .722, 95% CI [.243, .918], *p* = .004; the relationship between Own Space and Well-being was moderate, ρ = .585, 95% CI [.031, .864], *p* = .028, with a lower bound very close to zero. The width of the intervals, calculated with the standard error proposed by Bonett and Wright (2000), indicates that the magnitude of these relationships is highly uncertain with 14 cases.

Table 7. Correlations between dimensions.

Dimension pair	n	ρ	IC 95 %	p
Personal space and Safety	14	.722	[.243, .918]	.004
Own space and Well-being	14	.585	[.031, .864]	.028
Safety and Well-being	14	.790	[.375, .941]	< .001

Note.N = 14. Own space = Own space in the dwelling; Safety = Safety within the dwelling; Well-being = Well-being in the dwelling. Pearson correlation. Confidence intervals were obtained using Fisher's z transformation. Cross-sectional design: the reported relationships are associations. Runs RUN-00128, RUN-00130, and RUN-00132 of Factoriza UAS (Tables 5, 7, and 9 of the package, compiled without modifying values). Preliminary cutoff: n = 14 out of a target of 100, with data collection ongoing.

DISCUSSION OF RESULTS

The purpose of this study was to examine the preliminary psychometric properties of the Scale of Women's Experience in Housing in southern Sinaloa. Own Space in the Home showed acceptable internal consistency with both coefficients; Safety Within the Home had a moderate alpha and a higher omega; and Well-being in the Home had the lowest alpha, which differed appreciably from its omega.

With 14 cases, these coefficients are highly unstable: the simulation literature on alpha and omega has been developed with much larger samples (Malkewitz et al., 2023); in addition, the internal structure could not be estimated. The results should be read as an initial review of the instrument, to be confirmed by the final data cut.

The difference between alpha and omega in Safety and in Well-being is consistent with the presence of items whose relationship with their dimension is very uneven. Alpha assumes that all items contribute equally to the construct, whereas omega weights each item according to its loading (McDonald, 1999/2013); thus, when one or two items are weakly related to the rest, alpha is lower than omega (Malkewitz et al., 2023).

In the Well-being dimension, R11 is the most striking case. Feeling calm in one's home is, in principle, a core component of well-being at home, and yet it was practically unrelated to the other items in the dimension. With 14 cases, a single atypical response can appreciably alter a correlation, so before any decision is made about this item, the cohort's response pattern and how well the item wording was understood should be reviewed.

In all three dimensions, the reverse-worded item was among the least consistent: R4 and R9 had the weakest relationship with their dimension, and R13 the second weakest. This pattern is compatible with a wording-related artifact, 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. Having one's own needs pushed into the background, feeling watched inside one's own home, and feeling tired while at home are not simply the negative pole of personal space, safety, and well-being; rather, they are experiences that the literature associates with the burden of domestic and care work (Chan et al., 2024; Torres Pérez, 2023) and with power relations within the household (INEGI, 2022; Keynejad et al., 2026).

It is therefore possible that the three reverse-scored items capture a facet of domestic burden and control that warrants examination as a dimension in its own right.

The safety items with the lowest means and the greatest dispersion were feeling safe when arriving home at night and the sense of not being watched. The former links the experience of the home to the immediate surroundings and to the time of day, factors that the literature has associated with women's perceptions of safety (te Braak and van Tienoven, 2025; Valladares Anguiano et al., 2018).

The fact that the reassurance provided by locks was related both to safety inside the home and to confidence on the street suggests that, for the participants, the physical protection of the home and the safety of the surrounding environment are part of a single appraisal.

The high correlations among the three dimensions, particularly that between safety and well-being, indicate that participants who feel safer in their homes also tend to experience greater well-being there, in line with frameworks linking residential safety to the experience of home and

https://doi.org/10.62486/978-9915-9966-6-0.Ch09

women's mental health (Keynejad et al., 2026).

At the same time, correlations of this magnitude raise the question of whether the three dimensions are empirically distinct or whether they partly reflect an overall favorable appraisal of the dwelling. This question can only be answered through the factor analysis of the final cohort.

Finally, the high means and negative skewness of most items describe a data collection wave in which participants rated their space, safety, and well-being in the home favorably.

This concentration at the high end of the scale reduces the variability available for estimating the relationships between items, and may reflect both the participants' actual experience and the characteristics of those who completed the questionnaire (at this data cutoff, 14 of the 40 people who opened it).

The studies that found associations between housing and women's well-being were conducted under conditions of overcrowding or informality (Chan et al., 2024; Wang and Liu, 2023), and a gender perspective remains scarce in housing and health research (Vásquez-Vera et al., 2022). Expanding the sample to women in diverse residential conditions will be necessary for the scale to capture the full range of the experience it aims to measure.

CONCLUSIONS

The study met its objective within the scope allowed by a preliminary data cut of 14 cases. In the pilot survey conducted in southern Sinaloa, the Women's Housing Experience Scale showed acceptable internal consistency for Own Space in the Home (α = .777; ω = .785), moderate consistency for Safety within the Home (α = .690; ω = .804), and low consistency according to alpha for Well-being in the Home (α = .593; ω = .720).

The participants rated their housing favorably across all three dimensions, with the highest means for feeling at peace and safe inside the home and the lowest means for tiredness, the ability to decide how spaces are arranged, and safety when arriving home at night. The three dimensions were positively related to one another.

The limitations are substantial. The sample of 14 cases, against a target of 100 and with data collection still ongoing, is insufficient to estimate the internal structure and produces unstable coefficients and wide confidence intervals. The participants completed the questionnaire in localities selected by the project lead, so the results cannot be generalized to women in southern Sinaloa.

The study did not measure the characteristics of the participants or their dwellings; therefore, the responses cannot be related to tenure, dwelling size, household composition, or caregiving burden. Because the design was cross-sectional, the direction of the relationships between the dimensions cannot be established. No confirmatory factor analysis was performed.

These results lead to several decisions for the authors. The first is to revise R11, whose relationship with its dimension was virtually null, by examining the response pattern in this data collection wave and respondents' comprehension of the item wording.

The second is to decide whether the reverse-worded items R4, R9, and R13 should be rewritten as positively worded items or grouped, together with additional items, into a dimension of domestic burden and control. The third is to document the origin of the items, the operational definition of the dimensions, and the criterion for selecting the localities. None of these decisions was made in the present analysis, which retains all fifteen items.

For future research, we propose completing data collection up to the planned target and including women in diverse residential conditions, such as social housing and peripheral settlements; repeating the exploratory factor analysis with the final dataset; confirming the structure in an independent sample through confirmatory factor analysis; and collecting data on the characteristics of the participants and their dwellings to relate psycho-environmental experience to the physical conditions of the home.

A scale with sufficient validity evidence would make it possible to incorporate a gender perspective into habitability studies in northwestern Mexico and to guide the design of housing that takes into account the needs of the women who live in it.

https://doi.org/10.62486/978-9915-9966-6-0.Ch09

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