

The Mediating Effect of Environmental Consciousness between Attitudes towards Urban Green Space and Sustainable Development

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DOI: <https://doi.org/10.51584/IJRIAS.2026.11013SP0025>

Received: 26 June 2026; Accepted: 01 July 2026; Published: 15 July 2026

ABSTRACT

Sustainable development remains one of the defining challenges of the twenty-first century, requiring the balanced integration of economic, social, and environmental objectives at every level of governance. This study investigated the mediating effect of environmental consciousness between residents' attitudes towards urban green space and sustainable development in Barangay Poblacion, Loreto, Agusan del Sur, Philippines. Although global awareness of the Sustainable Development Goals is uneven and urban green-space provision in the country falls well below international benchmarks, little empirical work has examined the psychological mechanism that links how residents value green space to broader sustainability outcomes in a rural Philippine local-government setting. Anchored on a descriptive-correlational, cross-sectional design, the study drew 303 household heads through simple random sampling from a population of 1,419, as determined by the Raosoft calculator at a 5% margin of error and 95% confidence level. Data were gathered using an adapted, expert-reviewed survey instrument measured on a five-point Likert scale, and analyzed using the mean, the Pearson product-moment correlation, multiple regression, and path analysis in AMOS. Results revealed high levels of environmental consciousness ($M = 4.16$), attitudes towards urban green space ($M = 4.13$), and sustainable development ($M = 4.11$). Significant positive relationships were found among all three variables, and path analysis confirmed that environmental consciousness partially mediated the relationship between attitudes towards urban green space and sustainable development, accounting for approximately 16.2% of the total effect. The findings suggest that cultivating environmental consciousness is a strategic lever for converting favourable green-space attitudes into sustainable outcomes, and they carry practical implications for local policy on green-space provision and environmental education. The study contributes to the limited body of urban environmental-psychology research in the Philippine context and offers an evidence-based foundation for future work in sustainable urban environmental management.

Keywords: environmental consciousness, urban green space, sustainable development, mediation, path analysis, household heads, Philippines

INTRODUCTION

The pursuit of sustainable development has become the organizing aspiration of contemporary global governance, yet the world continues to confront profound economic, social, and environmental challenges. The World Economic and Social Survey (United Nations, 2013) observed that more than one billion people still lived in extreme poverty and that achieving sustainability would require concerted global action to deliver the legitimate aspirations of present and future generations. In response, the United Nations adopted the seventeen Sustainable Development Goals (SDGs) in 2015 through the resolution Transforming Our World: The 2030 Agenda for Sustainable Development (United Nations, 2015), committing member states to eradicate poverty and to advance development across its economic, social, and environmental dimensions in a balanced and

integrated manner. Sustainable development, in the widely cited formulation of the World Commission on Environment and Development in 1987, is development that meets the needs of the present without compromising the ability of future generations to meet their own needs, a definition that continues to frame contemporary scholarship on the subject (Shi et al., 2019).

Despite the near-universal diplomatic endorsement of the SDGs, public awareness of them remains strikingly uneven. Globally, awareness of the SDGs is estimated at roughly one-half of the population, yet only a small fraction of citizens describe themselves as very well informed about the goals (Lampert & Papadongonas, 2016). Survey evidence from across Europe has likewise shown that sizeable segments of the population had never heard of the SDGs, underscoring a persistent gap between international commitment and grassroots comprehension. This awareness deficit matters because the progress achieved to date has repeatedly demonstrated that the goals must ultimately be pursued at the local, and specifically the urban, level, where policy meets everyday life (Siragusa et al., 2020). It is for this reason that the Joint Research Centre of the European Commission published a European Handbook for SDG Voluntary Local Reviews, offering quantifiable and comparable indicators to help local actors monitor progress and sustain transformative action towards the goals (Siragusa et al., 2020).

Among the most tangible arenas in which local sustainability is contested is the provision of urban green space. Borowy (2013) recommends a minimum of nine square metres of green space per person, with an ideal provision of up to fifty square metres, on the grounds that parks, playgrounds, and residential greenery promote mental and physical health, foster social cohesion, support physical activity, and mitigate exposure to air pollution, noise, and excessive heat. Urban green space thereby functions not merely as an amenity but as a strategy for attaining sustainability, and the establishment of parks and the safeguarding of open space are recognized as necessary conditions for integrating biodiversity into sustainable development (Haq, 2011). The restorative benefits of contact with nature are well established in environmental psychology: exposure to natural settings has been shown to aid recovery and reduce stress (Ulrich, 1984), while attention-restoration theory explains how natural environments replenish the cognitive resources depleted by urban life (Kaplan, 1995; Berman et al., 2008).

In the Philippine context, the gap between this benchmark and lived reality is considerable. National assessments have estimated that Filipinos have access to an average of only about five square metres of open space per person, well below the nine-square-metre minimum, even as urbanization intensifies and large segments of the urban population remain exposed to poverty (Olfato-Parojinog et al., 2024). Rapid conversion of open land to built-up uses, combined with weak enforcement of land-use plans, continues to erode the limited green space that remains. These conditions make the Philippines a compelling, and comparatively under-studied, setting in which to examine how residents value green space and how those attitudes bear on sustainability.

The challenge is acutely visible at the municipal scale. In the Municipality of Loreto, Agusan del Sur, a principal driver of green-space loss has been the conversion of open space into multipurpose buildings and offices (Ecoprofile Loreto, 2019). Local governments require robust implementation plans and policies to realize sustainability targets, and innovative, people-centred solutions are needed to translate aspiration into practice (Howes et al., 2017). Loreto is a first-class municipality strategically located as a junction to destinations across Agusan del Sur and neighbouring provinces; it has recorded steady population growth and, in 2023, was recognized among the most improved and most competitive local government units in the province. Yet its rapid development coexists with a high poverty incidence that threatens sustainability, a tension that is significant because poverty eradication is the first of the SDGs and its effects are all-encompassing (United Nations, 2015). Global evidence indicates that prioritizing poverty alleviation produces positive spillovers across the wider network of SDG indicators (Lusseau & Mancini, 2019).

Underlying the relationship between how people treat green space and whether their communities develop sustainably is a psychological construct: environmental consciousness. Environmental consciousness has been characterized as the perception held by an individual or organization regarding environmental concepts such as environmental protection, policy, and management (Mostafa, 2007). This construct is closely related to long-standing measures of environmental worldview and concern, including the New Ecological Paradigm scale,

which captures the degree to which people endorse an ecological rather than a purely anthropocentric view of the human–environment relationship (Dunlap et al., 2000), and the value-based structure of environmental concern spanning egoistic, altruistic, and biospheric orientations (Schultz, 2001). Perception, in turn, has been described in terms of how individuals assess the present condition of existing green spaces and how they feel about them, with preferences linked to how such spaces might be used (Farahani & Maller, 2018). Because environmental consciousness is fundamentally a perception, reaching sustainability requires that individuals' perceptions and attitudes evolve, an evolution that can be cultivated through education (Kanapathy et al., 2019). Zwickle et al. (2014) argued that future generations, particularly those in higher education, play a vital role in serving the well-being of humanity and protecting the environment.

Theoretically, the sequence from attitudes to consciousness to behaviourally consequential outcomes is consistent with well-established models of the attitude–behaviour relationship. The theory of planned behaviour holds that attitudes, together with subjective norms and perceived behavioural control, shape intentions that in turn guide behaviour (Ajzen, 1991). Extending this logic to the environmental domain, favourable attitudes towards green space may strengthen a broader environmental consciousness, which then disposes residents towards the choices, conservation, conscious consumption, and civic participation, that constitute sustainable development in practice. Recent empirical work supports the mediating status of consciousness in such chains: environmental consciousness has been shown to influence green behaviour through its effect on environmental attitude among younger cohorts (Khan, 2024), and composite measures of environmental consciousness have proven robust predictors of sustainable orientation among consumers (D'Attoma & Ieva, 2024; Mostafa, 2007).

Notwithstanding this growing body of evidence, most existing studies have been situated in high-income, highly urbanized, or student populations, and comparatively few have examined the attitude–consciousness–sustainability pathway among ordinary residents of a rural, Indigenous-majority municipality in the Global South. The Philippine literature on urban environmental psychology remains limited, and the specific question of whether environmental consciousness mediates the link between green-space attitudes and sustainable development has not, to the researchers' knowledge, been formally tested in a local-government setting such as Loreto. This study addresses that gap by measuring the three constructs among household heads and by using path analysis to determine whether environmental consciousness operates as an intervening variable.

The primary purpose of this study is to determine the mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development among residents of Poblacion, Loreto, Agusan del Sur. Specifically, the study sought (1) to assess the level of environmental consciousness, attitudes towards urban green space, and sustainable development among residents; (2) to determine whether a significant relationship exists between attitudes towards urban green space and sustainable development; (3) to determine whether a significant relationship exists between attitudes towards urban green space and environmental consciousness, and between environmental consciousness and sustainable development; and (4) to determine whether environmental consciousness significantly mediates the relationship between attitudes towards urban green space and sustainable development.

Consistent with these objectives, the study was guided by the following research questions: (a) What is the level of environmental consciousness, attitudes towards urban green space, and sustainable development among the residents? (b) Is there a significant relationship among these three variables? and (c) Does environmental consciousness significantly mediate the relationship between attitudes towards urban green space and sustainable development? The corresponding null hypotheses, tested at the 0.05 level of significance, were: H_{01} , there is no significant relationship between attitudes towards urban green space and sustainable development; H_{02} , there is no significant relationship between attitudes towards urban green space and environmental consciousness; H_{03} , there is no significant relationship between environmental consciousness and sustainable development; and H_{04} , environmental consciousness does not significantly mediate the relationship between attitudes towards urban green space and sustainable development. The hypothesized relationships are summarized in the conceptual framework presented in Figure 1, in which attitudes towards urban green space serve as the independent variable, environmental consciousness as the mediating variable, and sustainable development as the dependent variable.

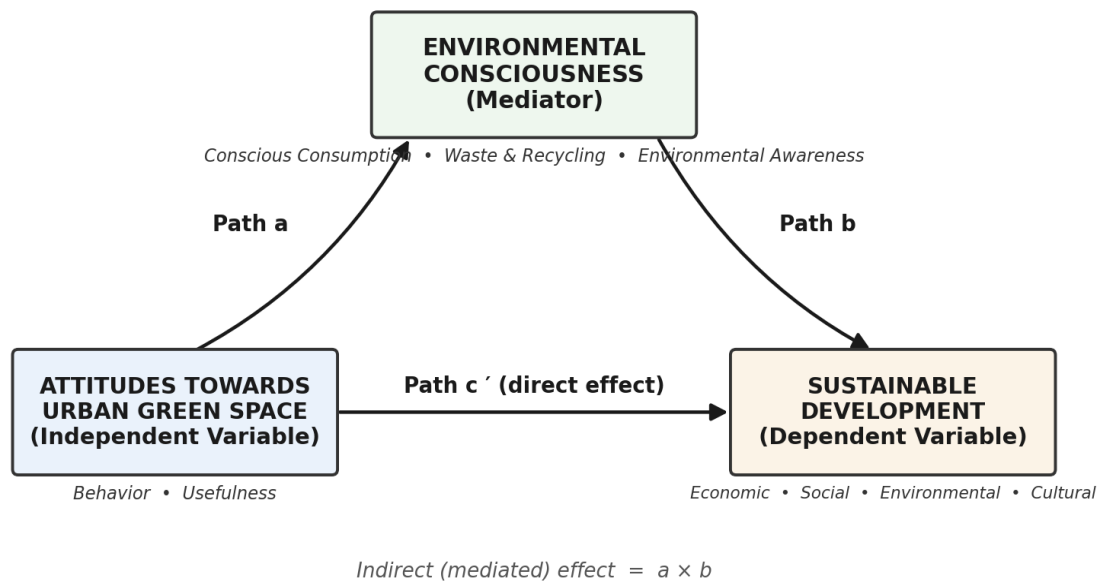


Figure 1. Conceptual framework of the study showing the hypothesized mediation of environmental consciousness between attitudes towards urban green space (independent variable) and sustainable development (dependent variable).

METHOD

Research Design

This study employed a quantitative, descriptive-correlational research design implemented through a cross-sectional survey. Quantitative research has been strongly influenced by the positivist scientific model, in which the researcher seeks to minimize subjectivity in order to attain objectivity (Creswell, 2014). Descriptive research describes attitudes and behaviours as perceived by respondents, whereas correlational research identifies the statistical relationship between two or more variables (Van der Stoep & Johnston, 2009). The correlational component is used to establish the strength and nature of the association among variables (Creswell, 2014). Because the central objective was to test an intervening-variable hypothesis, the study additionally used path analysis, distinguishing direct and indirect effects. A direct effect is present when an independent variable exerts influence on a dependent variable along a single path, whereas an indirect effect arises when the independent variable influences the dependent variable through a third, intervening variable. This design is appropriate to the study's objectives because it permits both the description of variable levels and the formal decomposition of the total effect of green-space attitudes on sustainable development into direct and mediated components.

Participants

The participants of this study were the household heads of Barangay Poblacion, Loreto, Agusan del Sur. Headship was not defined by externally imposed criteria but was self-identified by each family, on the understanding that the household head exercises final decision-making authority over the family's ideas and concerns. Focusing on household heads allowed the study to capture the decision-relevant perceptions of each family regarding environmental consciousness, attitudes towards green space, and sustainable development. According to the Community-Based Monitoring System, Barangay Poblacion had a total of 1,419 household heads, which constituted the study population. Simple random sampling was used to select respondents, as it is one of the most widely applied sampling methods in quantitative survey research (Noor et al., 2022) and gives every member of the population an equal chance of selection (Sambuo, 2021). This method is regarded as efficient when the population is relatively homogeneous and a complete population list is readily available (Cohen et al., 2018), both of which conditions were satisfied by the barangay's monitoring-system registry.

The required sample size was determined using the Raosoft sample-size calculator, applying a 5% margin of error and a 95% confidence level to the population of 1,419 household heads; this yielded a required sample of 303 respondents. To resolve any ambiguity regarding the number of respondents, the following account of data collection is provided. A total of 303 questionnaires were distributed and administered face-to-face to randomly selected household heads. Because the survey was administered in person and each instrument was screened for completeness on the spot before acceptance, all 303 questionnaires were returned fully and validly accomplished, yielding a usable response rate of 100%. The complete set of 303 valid cases was therefore carried forward into all subsequent statistical analyses, and this figure is the basis for every result reported in this manuscript. The face-to-face mode of administration, combined with immediate completeness checks, accounts for the absence of missing or partially completed returns.

Description of the Study Area

The study was conducted within the Municipality of Loreto, Agusan del Sur, a first-class municipality whose sources of income include local tax revenues, the internal revenue allotment (now the national tax allotment), operating and miscellaneous fees, agriculture, tourism, and trade and commerce. Loreto is strategically situated as a junction to various destinations within Agusan del Sur and neighbouring provinces. It recorded an annual population growth rate of 1.48% from 2010 to 2015 and an increasing share of the provincial population over the same period, rising from 6.0% in 2010 to 6.1% in 2015. In 2023, the municipality was recognized as first-place Most Improved Municipality and second-place Most Competitive Municipality among the local government units of Agusan del Sur. Notwithstanding this rapid improvement, the municipality continues to record a high poverty incidence that poses a threat to sustainability and development. Because poverty eradication is the foremost of the SDGs and its impacts are comprehensive (United Nations, 2015), the coexistence of competitiveness and poverty in Loreto renders it a particularly instructive site for the present inquiry. The 2030 Agenda (United Nations, 2015) explicitly identifies poverty reduction as a top priority, and interaction-network analyses of SDG indicators across income levels indicate that a focus on poverty alleviation produces positive effects on sustainable development more broadly (Lusseau & Mancini, 2019). Figure 2 depicts the geographic location of the study area, and Figure 3 shows a representative view of urban green space within Poblacion, Loreto.

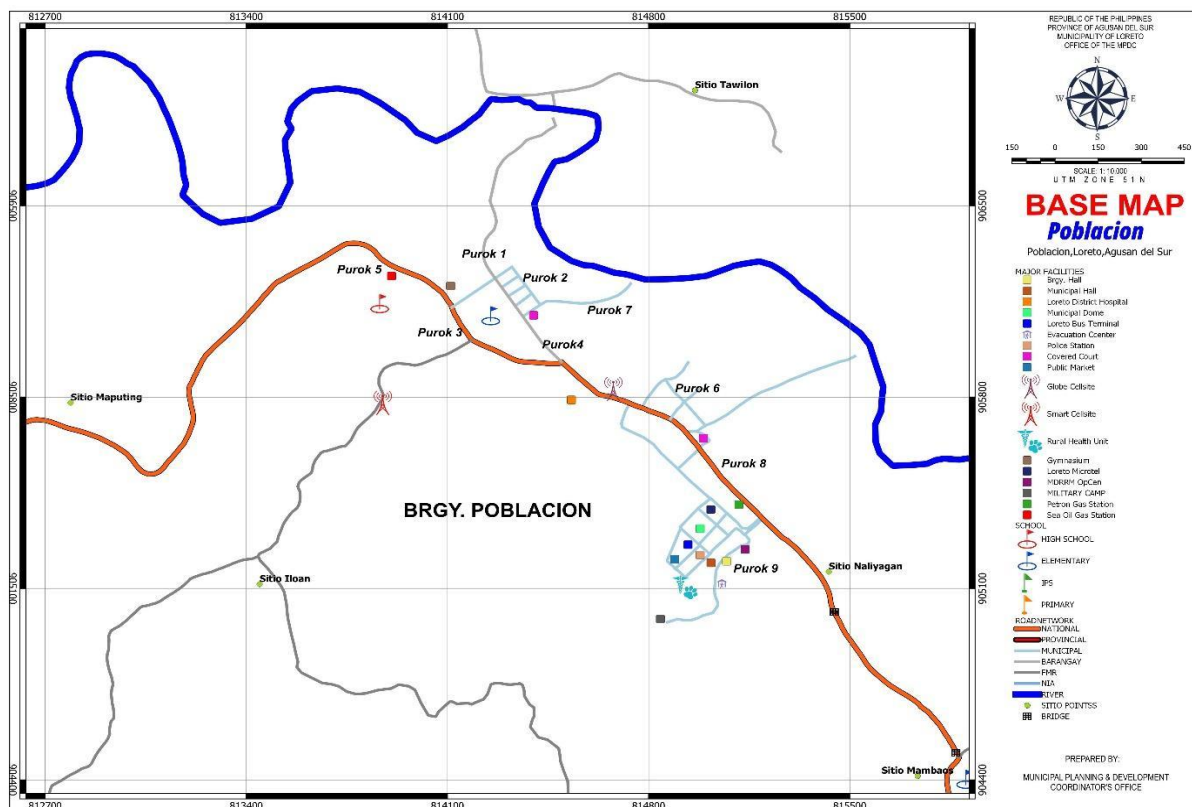


Figure 2. Study area map showing the location of Barangay Poblacion within the Municipality of Loreto, Agusan del Sur, Philippines.

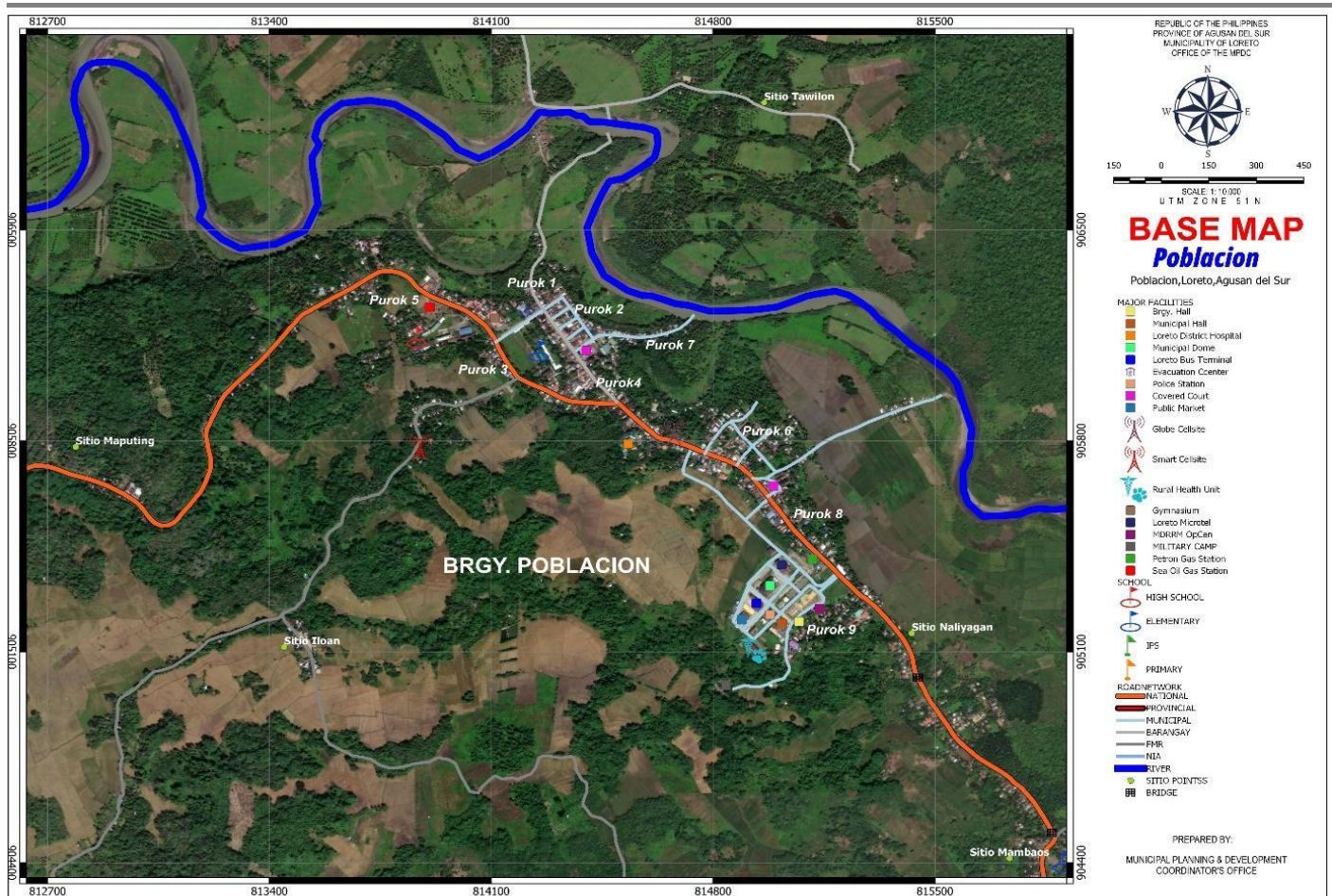


Figure 3. Representative urban green space within Poblacion, Loreto, Agusan del Sur, illustrating the open and vegetated spaces whose valuation was examined in this study.

Research Instruments

The study used an adapted and revised survey instrument drawn from several established sources in order to investigate the possible mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development. The environmental-consciousness scale was based on the Environmental Consciousness Survey of University Students (Eren & Yaqub, 2015), which measures a person's consciousness towards the environment through three indicators: conscious consumption, waste and recycling, and environmental awareness. The urban-green-space scale was drawn from the Attitudes Towards Urban Green Space instrument (Balram & Dragicevic, 2005), which measures a person's attitude towards green spaces through two indicators: behaviour and usefulness. The sustainable-development scale was based on the Education for Sustainable Development Survey (Afroz & Ilham, 2020), which measures a person's orientation towards sustainable development through four indicators: economic, social, environmental, and cultural. All items were measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Because the pooled items were adapted from their original contexts, the instrument was subjected to a transparent process of contextualization and quality assurance before fielding. Items were reviewed for conceptual relevance to the three study variables; language was simplified and localized to suit the setting; and the culturally salient cultural indicator was deliberately retained in view of the Indigenous-majority composition of the population. Content validity was reviewed by the research adviser and subject-matter experts, and the instrument was pilot-tested to establish internal-consistency reliability, with subscale reliability coefficients falling within the conventionally acceptable range. This sequence, from source identification through adaptation, validation, sampling, and analysis, is presented in the flow diagram in Figure 4, which is provided as a transparency tool to document how the modified instruments were derived and how respondents progressed through the study.

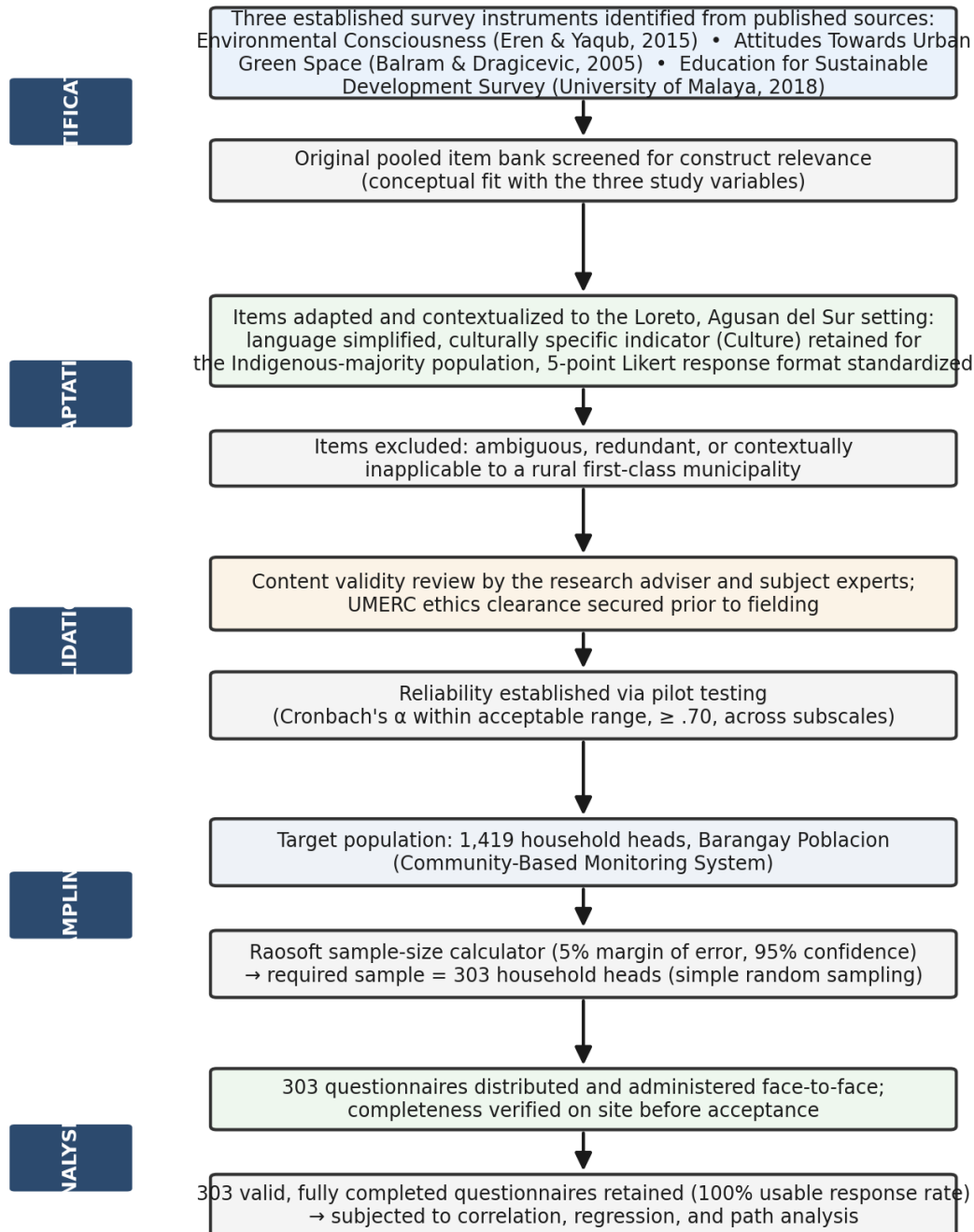


Figure 4. Instrument-adaptation and participant-flow diagram documenting the identification, adaptation, validation, sampling, and analysis stages of the study.

In evaluating the level of consciousness towards the environment, the scale in Table 1 was used.

Table 1. Interpretative Scale for the Level of Environmental Consciousness

Range of Means	Descriptive Level	Interpretation
4.20 – 5.00	Every time	Items relating to consciousness towards the environment are evident at all times.
3.40 – 4.19	Often	Items relating to consciousness towards the environment are evident most of the time.

2.60 – 3.39	Sometimes	Items relating to consciousness towards the environment are evident occasionally.
1.80 – 2.59	Rarely	Items relating to consciousness towards the environment are evident in few instances.
1.00 – 1.79	Never	Items relating to consciousness towards the environment are not evident at all.

In evaluating the level of attitude towards urban green space, the scale in Table 2 was used.

Table 2. Interpretative Scale for the Level of Attitudes Towards Urban Green Space

Range of Means	Descriptive Level	Interpretation
4.20 – 5.00	Completely Agree	Items relating to attitude towards urban green space are evident at all times.
3.40 – 4.19	Agree	Items relating to attitude towards urban green space are evident most of the time.
2.60 – 3.39	Undecided	Items relating to attitude towards urban green space are evident occasionally.
1.80 – 2.59	Disagree	Items relating to attitude towards urban green space are evident in few instances.
1.00 – 1.79	Completely Disagree	Items relating to attitude towards urban green space are not evident at all.

In evaluating the level of development towards sustainability, the scale in Table 3 was used.

Table 3. Interpretative Scale for the Level of Sustainable Development

Range of Means	Descriptive Level	Interpretation
4.20 – 5.00	Strongly Agree	Items relating to development towards sustainability are evident at all times.
3.40 – 4.19	Agree	Items relating to development towards sustainability are evident most of the time.
2.60 – 3.39	Don't Know	Items relating to development towards sustainability are evident occasionally.
1.80 – 2.59	Disagree	Items relating to development towards sustainability are evident in few instances.
1.00 – 1.79	Strongly Disagree	Items relating to development towards sustainability are not evident at all.

Data Collection Procedure

The researcher prepared a letter requesting permission to conduct the survey among selected residents of Poblacion, Loreto, Agusan del Sur. Upon the approval of the Barangay Captain, the questionnaires were distributed among the residents of the barangay. While administering the survey, the researcher and a colleague explained the purpose of the study and how the research could contribute to the locality in the

present and the future. During collection, the researcher and colleague thoroughly checked and reviewed each response for completeness before acceptance, so that only fully accomplished instruments were treated as valid. Once each respondent had finished answering, the completed and valid questionnaires were retrieved. The gathered questionnaires were then subjected to statistical computation, tabulation, interpretation of relationships, and analysis of effects.

Ethical Considerations

The study was conducted in accordance with the highest ethical standards and guidelines set by the University of Mindanao Ethics Review Committee (UMERC). Prior to the conduct of the survey, a UMEREC certification was secured, and its key provisions, voluntary participation, privacy, confidentiality, assessment of risks and benefits, sensitivity to cultural issues, and safeguards against falsification, conflict of interest, and technological misuse, were observed throughout. A written informed-consent form was obtained from every respondent, affirming their willingness to participate whether or not they were members of an Indigenous people or community. Participation was entirely voluntary, and any respondent who wished to withdraw at any point was free to do so without penalty. In compliance with Republic Act No. 10173, the Data Privacy Act of 2012, the researcher ensured at all times the confidentiality of any personal information that came to their knowledge and possession, and the data were used solely for the purposes of this study. Given the Indigenous-majority composition of the study area, particular care was taken to obtain community consent and to conduct the survey in a culturally respectful manner.

Data Analysis

Several statistical tools were used to obtain a comprehensive analysis and interpretation of the data gathered from respondents. The mean was used to measure the level of perception regarding urban green space, environmental consciousness, and sustainable development among residents, with the results interpreted against the scales presented in Tables 1 through 3. The Pearson product-moment correlation coefficient was used to determine the strength and direction of the relationships among the variables. Multiple regression analysis was used to estimate the influence of the predictor variables on sustainable development. Finally, path analysis was employed to determine the mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development.

The mediation analysis followed the logic of the causal-steps approach articulated by Baron and Kenny (1986), which requires that the independent variable be significantly associated with both the mediator and the outcome, that the mediator be significantly associated with the outcome, and that the direct relationship between the independent variable and the outcome be reduced, though not necessarily to zero, once the mediator is introduced. A reduction that leaves the direct effect significant indicates partial mediation, whereas a reduction to non-significance indicates full mediation. The total effect of attitudes towards urban green space on sustainable development was decomposed into a direct effect and an indirect effect, the latter computed as the product of the coefficient of the path from the independent variable to the mediator (Path A) and the coefficient of the path from the mediator to the outcome (Path B), consistent with the product-of-coefficients strategy advanced by Preacher and Hayes (2008) and Hayes (2018). The proportion of the total effect that is mediated was obtained by dividing the indirect effect by the total effect.

The path model was estimated using Analysis of Moment Structures (AMOS) with maximum-likelihood estimation. Before estimation, the standard assumptions underlying correlation, regression, and path analysis were examined. Linearity between variable pairs was inspected through scatterplots; the normality of the distributions was evaluated so that the maximum-likelihood estimator could be appropriately applied; multicollinearity among predictors was assessed to ensure that the indicators were not so highly inter-correlated as to distort the coefficients; and homoscedasticity was checked to confirm that residual variance was reasonably constant across the range of predicted values. The precision of the estimated paths was gauged by their standard errors, with smaller standard errors indicating more precise estimates, and the significance of each path was evaluated against the critical ratio at the 0.05 level. This sequence of assumption checks and estimation steps ensured that the mediation results reported below rest on a scientifically sound analytical foundation aligned with the study's objectives and design.

RESULTS AND DISCUSSION

Results

Table 4 presents the level of environmental consciousness among the household heads. The overall mean was 4.16, interpreted as high, with a standard deviation of 0.47, indicating relatively consistent responses. Among the indicators, environmental awareness recorded the highest mean, and its high level is characterized by increased knowledge that fosters a deeper understanding of environmental issues. Conscious consumption obtained the lowest mean and the largest standard deviation (0.97), signalling that residents' responses on this indicator were comparatively less uniform. Taken together, the results indicate that the residents possess a high and generally coherent level of environmental consciousness.

Table 4. Level of Environmental Consciousness

Environmental Consciousness	Mean	SD	Interpretation
Conscious Consumption	3.42	0.97	High
Waste and Recycling	3.60	0.64	High
Environmental Awareness	4.04	0.56	High
Overall	4.16	0.47	High

The level of attitudes towards urban green space is shown in Table 5. The overall mean of 4.13 is interpreted as high, and every indicator recorded a standard deviation below 1.00, reflecting a broadly high and consistent level of positive attitude. The usefulness indicator obtained the highest mean (4.18), suggesting that residents strongly recognize the diverse benefits that green spaces provide, whereas the behaviour indicator obtained the lowest mean (4.09) yet with a comparatively concentrated standard deviation. The pattern indicates that residents both value green space and are inclined to act favourably towards it.

Table 5. Level of Attitudes Towards Urban Green Space

Attitudes Towards Urban Green Space	Mean	SD	Interpretation
Behavior	4.09	0.59	High
Usefulness	4.18	0.64	High
Overall	4.13	0.58	High

Table 6 presents the level of sustainable development among respondents. The overall mean of 4.11 is interpreted as high and is accompanied by the lowest standard deviation observed across the three variables (0.28), indicating a highly consistent understanding of sustainable development. Among the indicators, culture obtained the highest mean (4.52), interpreted as very high, while the environment indicator obtained the lowest mean (3.92). The pre-eminence of the cultural dimension is contextually meaningful: a majority of the population of Poblacion, Loreto belongs to Indigenous peoples' groups, and the very high cultural score reflects the community's emphasis on culture as an integral element of sustainability.

Table 6. Level of Sustainable Development

Sustainable Development	Mean	SD	Interpretation
Environment	3.92	0.34	High

Economy	3.97	0.37	High
Social	4.04	0.34	High
Culture	4.52	0.45	Very High
Overall	4.11	0.28	High

Table 7 presents the relationship between attitudes towards urban green space and sustainable development. The overall correlation was positive and significant ($r = 0.357$, $p < 0.05$), significant at both the 0.05 and 0.01 levels. The behaviour indicator was significantly and positively correlated with all four dimensions of sustainable development, environment ($r = 0.255$), economy ($r = 0.331$), social ($r = 0.226$), and culture ($r = 0.301$), with p-values below 0.05 throughout. The usefulness indicator likewise showed significant positive correlations with environment ($r = 0.154$), economy ($r = 0.230$), social ($r = 0.150$), and culture ($r = 0.318$). These results lead to the rejection of the first null hypothesis, which states that there is no significant relationship between attitudes towards urban green space and sustainable development.

Table 7. Significant Relationship Between Attitudes Towards Urban Green Space and Sustainable Development

	Environment	Economy	Social	Culture	Sustainable Development
Behavior	.255** $p=.000$	.331** $p=.000$	.226** $p=.000$	.301** $p=.000$	.381** $p=.000$
Usefulness	.154** $p=.007$	.230** $p=.000$	.150** $p=.009$	.318** $p=.000$	.299** $p=.000$
Attitudes Towards Urban Green Space	.214** $p=.000$	.294** $p=.000$	.197** $p=.001$	.327** $p=.000$	.357** $p=.000$

Note. **Correlation is significant at the 0.01 level; *significant at the 0.05 level (2-tailed).

Table 8 presents the relationship between attitudes towards urban green space and environmental consciousness. Both indicators of attitude, behaviour and usefulness, returned p-values of 0.00, signifying significance at the 0.05 and 0.01 levels, and their positive coefficients indicate positive linear relationships with each indicator of environmental consciousness. The overall correlation was positive and significant ($r = 0.323$, $p < 0.05$). These results lead to the rejection of the second null hypothesis, which states that there is no significant relationship between attitudes towards urban green space and environmental consciousness.

Table 8. Significant Relationship Between Attitudes Towards Urban Green Space and Environmental Consciousness

	Conscious Consumption	Waste Recycling and	Environmental Awareness	Environmental Consciousness
Behavior	.347** $p=.000$	.350** $p=.000$	.346** $p=.000$	.378** $p=.000$
Usefulness	.241**	.168**	.186**	.240**

	$p=.000$	$p=.003$	$p=.001$	$p=.000$
Attitudes Towards Urban Green Space	.308** $p=.000$	.270** $p=.000$	.277** $p=.000$	.323** $p=.000$

Note. **Correlation is significant at the 0.01 level (2-tailed).

Table 9 presents the relationship between environmental consciousness and sustainable development. The overall correlation was positive and significant ($r = 0.459$, $p < 0.05$). Conscious consumption correlated positively and significantly with environment ($r = 0.491$), economy ($r = 0.295$), social ($r = 0.274$), and culture ($r = 0.162$). Waste and recycling likewise showed significant positive relationships with environment ($r = 0.632$), economy ($r = 0.305$), social ($r = 0.327$), and culture ($r = 0.147$). Environmental awareness was significantly and positively related to environment ($r = 0.615$), economy ($r = 0.324$), social ($r = 0.321$), and culture ($r = 0.143$). The consistently strongest associations appear on the environmental dimension, which is intuitive given the conceptual proximity of environmental consciousness to environmental sustainability. These results lead to the rejection of the third null hypothesis, which states that there is no significant relationship between environmental consciousness and sustainable development.

Table 9. Significant Relationship Between Sustainable Development and Environmental Consciousness

	Environment	Economy	Social	Culture	Sustainable Development
Conscious Consumption	.491** $p=.000$	.295** $p=.000$	.274** $p=.000$	.162** $p=.010$	.401** $p=.000$
Waste and Recycling	.632** $p=.000$	.305** $p=.000$	.327** $p=.000$	.147* $p=.010$	.458** $p=.000$
Environmental Awareness	.615** $p=.000$	.324** $p=.000$	.321** $p=.000$	.143* $p=.010$	.456** $p=.000$
Environmental Consciousness	.585** $p=.000$	.333** $p=.000$	.317** $p=.000$	.169** $p=.000$	.459** $p=.000$

Note. **Correlation is significant at the 0.01 level; *significant at the 0.05 level (2-tailed).

Table 10 presents the path analysis of the mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development, estimated through regression analysis in AMOS. The path from attitudes towards urban green space to environmental consciousness (Path A) was significant at the 0.05 level; the path from environmental consciousness to sustainable development (Path B) was likewise significant; and the direct path from attitudes towards urban green space to sustainable development (Path C) was also significant. The very low standard errors across the three paths (0.044, 0.025, and 0.031) indicate that the estimates are precise. Because the direct effect remained significant after the mediator was introduced, the model reflects partial, rather than full, mediation.

Table 10. Mediating Effect of Environmental Consciousness: Path Analysis (Partial Mediation)

Path (Dependent ← Independent)	Estimate	S.E.	C.R.	P	Label
Environmental Consciousness ← Attitudes Towards Urban Green Space	0.260	0.044	5.936	***	Partial Mediation

Sustainable Development ← Attitudes Towards Urban Green Space	0.111	0.025	4.458	***	Partial Mediation
Sustainable Development ← Environmental Consciousness	0.226	0.031	7.330	***	Partial Mediation

Note. *** $p < .001$. S.E. = standard error; C.R. = critical ratio. Estimates are unstandardized regression weights from AMOS.

Interpreting the coefficients, the estimate of 0.26 for the relationship between attitudes towards urban green space and environmental consciousness indicates that the presence of favourable green-space attitudes increases the manifestation of environmental consciousness, with an effect of approximately 26%. The coefficient of 0.111 for the direct relationship between attitudes towards urban green space and sustainable development indicates that the more evident residents' favourable attitudes are, the higher the level of development towards sustainability, corresponding to an effect of about 11%. The coefficient of 0.226 for the relationship between environmental consciousness and sustainable development indicates that as environmental consciousness increases, sustainable development improves, with roughly 22.6% of the level of sustainable development explained by environmental consciousness.

The mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development was statistically significant at the 0.05 level, as depicted in the AMOS path output in Figure 5. When environmental consciousness was entered into the model, the association between attitudes towards urban green space and sustainable development moved from a total effect of 0.357 (see Table 7) to a direct effect of 0.111 while remaining significant, demonstrating that only part of the influence of green-space attitudes is transmitted through environmental consciousness, with the remainder being either direct or channelled through other factors not included in the model.

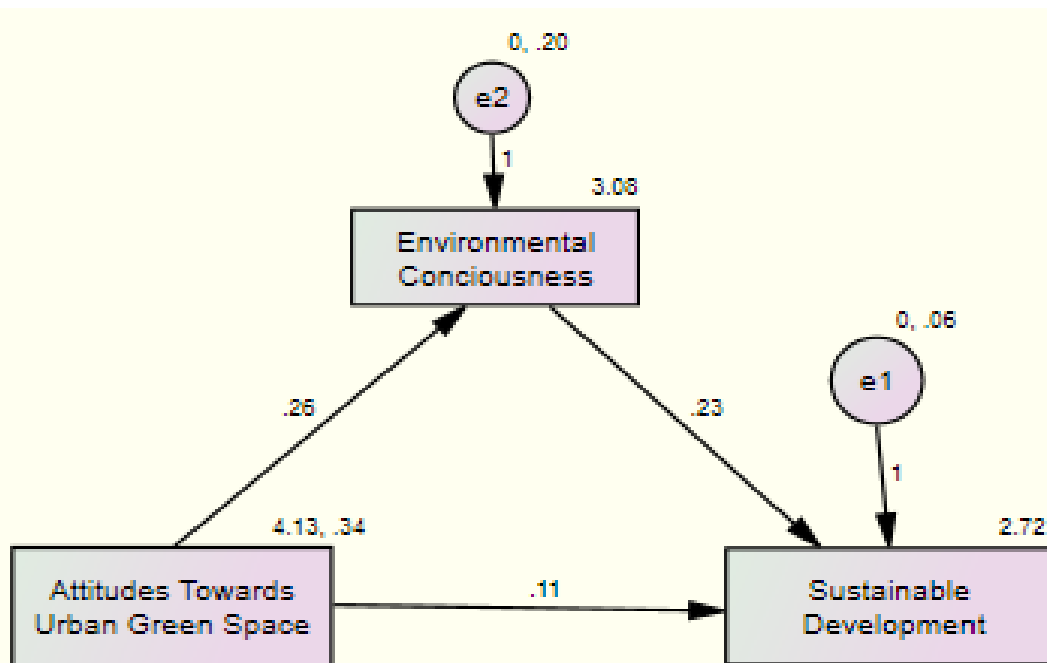


Figure 5. AMOS path-analysis output for the mediating effect of environmental consciousness on the relationship between attitudes towards urban green space and sustainable development.

The magnitude of the mediation can be quantified as follows. The direct effect of 0.357 represents the degree of correlation between attitudes towards urban green space and sustainable development with environmental consciousness in the equation. The indirect effect, computed as the product of the coefficients of Path A and Path B (0.26×0.226), equals 0.058 and measures the portion of the attitude–sustainability relationship that is transmitted through environmental consciousness. Dividing the indirect effect (0.058) by the total effect

(0.357) yields 0.162. This means that approximately 16.2% of the overall influence of attitudes towards urban green space on sustainable development is mediated by environmental consciousness, while the remaining 83.8% is either direct or attributable to mediating factors not included in the model. Figure 6 provides a visual summary of the mediation model with its standardized coefficients for ease of interpretation.

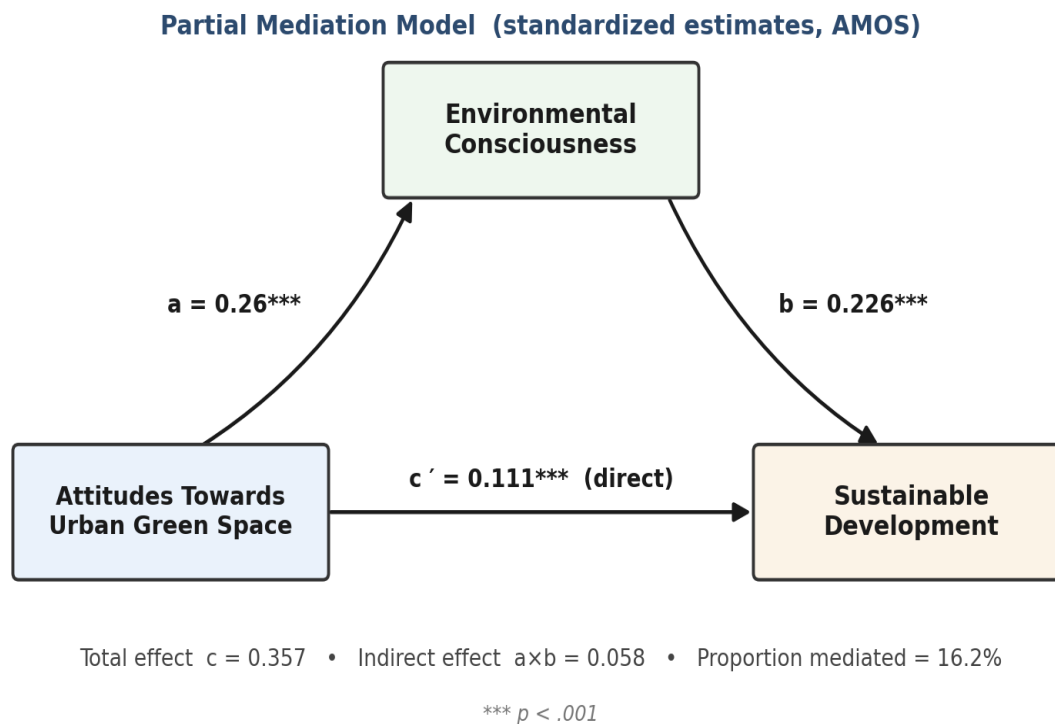


Figure 6. Standardized summary of the partial-mediation model, showing the direct path ($c' = 0.111$), the mediated paths ($a = 0.26$; $b = 0.226$), the total effect ($c = 0.357$), the indirect effect ($a \times b = 0.058$), and the proportion mediated (16.2%).

DISCUSSION

The findings of this study can be read as an empirical articulation of a psychological pathway that begins with how residents value green space, passes through their broader environmental consciousness, and culminates in their orientation towards sustainable development. Rather than treating the three variables as independent descriptors, the analysis situates them within a causal chain and asks what is transmitted, and how much, from one to the next. The discussion that follows interprets each result in light of established theory and situates it against the international literature.

The high level of environmental consciousness across all its indicators aligns with studies that examine the relationship between consciousness and awareness within a sustainability perspective (Tural & Turan, 2024) and resonates with the broader tradition of measuring environmental worldview through instruments such as the New Ecological Paradigm scale (Dunlap et al., 2000) and the tripartite structure of environmental concern (Schultz, 2001). That environmental awareness emerged as the strongest indicator, while conscious consumption was the least uniform, is theoretically coherent: awareness is a cognitive orientation that can be widely shared through information exposure, whereas consumption behaviour is constrained by household income and market access, producing greater heterogeneity in a municipality where poverty remains prevalent. This interpretation is consistent with the observation that environmental consciousness is a robust but multidimensional construct whose behavioural components respond to material as well as attitudinal conditions (D'Attoma & Ieva, 2024; Mostafa, 2007).

The high level of attitudes towards urban green space, driven especially by the usefulness indicator, suggests that residents recognize the diverse benefits of green spaces and are disposed to invest in and engage with

them. This finding is in line with evidence that urban communities can hold excellent attitudes towards their green spaces and thereby contribute to enhanced quality of life (Nasir & Rahim, 2020), and it is consistent with the restorative-environments tradition in environmental psychology, which holds that people are drawn to natural settings because such settings restore attention and reduce stress (Kaplan, 1995; Ulrich, 1984; Berman et al., 2008). The salience of usefulness over behaviour also mirrors the international finding that perceived benefit is often a stronger and more consistent attitudinal component than reported behaviour, particularly where structural provision of green space is limited (Haq et al., 2021; Arvanitidis et al., 2009).

The very high level of the cultural dimension of sustainable development merits particular emphasis. Because the majority of the population of Poblacion, Loreto belongs to Indigenous peoples' groups, the pre-eminence of culture reflects a community for whom cultural continuity is inseparable from the idea of a sustainable future. This finding supports the argument that culture is an essential element of the value of sustainability, building collective thinking and connecting communities (Hawkes, 2001), and it enriches the conventional three-pillar model of sustainability, economic, social, and environmental (Dempsey et al., 2011), by foregrounding a fourth, cultural pillar that is often marginalized in mainstream sustainability discourse. The result therefore offers a contextually grounded contribution: in Indigenous-majority settings, sustainability frameworks that omit culture risk misreading the very foundation of community commitment.

The significant relationship between attitudes towards urban green space and sustainable development indicates that positive attitudes foster the appreciation and interaction that, in turn, advance sustainability. Green spaces shape residents' experience and perception of their environment, contributing to a more sustainable trajectory. This accords with the caution that, where the needs of residents with respect to urban green space are not prioritized, it becomes more difficult to use green space as an instrument for achieving global sustainable development (Cilliers et al., 2013). Internationally, the attitude–sustainability linkage observed here parallels findings from the Republic of Korea, where residents with high environmental awareness sought to participate in expanding green spaces through non-profit organizations, thereby improving quality of life and civic identity, both objectives of sustainability (Lee & Kim, 2015).

The significant relationship between attitudes towards urban green space and environmental consciousness implies that valuing green space cultivates a broader environmental consciousness that encourages conservation and stewardship. This is consistent with evidence that environmental value orientation and environmental belief contribute positively to the formation of a moral obligation to conserve urban green space (Su et al., 2022), and it is well explained by the theory of planned behaviour, in which attitudes feed forward into the intentions and dispositions that govern behaviour (Ajzen, 1991). The direction of influence observed here, from a specific attitude object (green space) to a general orientation (environmental consciousness), illustrates how concrete, place-based experiences can scaffold more abstract environmental commitments.

The significant relationship between environmental consciousness and sustainable development positions consciousness as a fundamental driver of sustainability. As residents become more aware of environmental issues, they are better placed to make informed decisions that advance sustainable policies and practices. This mirrors the argument that the state of environmental consciousness contributes not only to understanding existing socio-economic development but also to moderating individual attitudes on environmental issues (Chukharev et al., 2023). The particularly strong association between environmental consciousness and the environmental dimension of sustainability is theoretically expected, given the conceptual proximity of the two, and it converges with recent international evidence that environmental consciousness operates as a decisive antecedent of pro-environmental and sustainable behaviour (Khan, 2024).

Taken together, the correlational results set the stage for the study's central contribution: the demonstration that environmental consciousness partially mediates the relationship between attitudes towards urban green space and sustainable development. The partial rather than full character of the mediation is itself informative. On the one hand, it confirms that a meaningful share of the influence of green-space attitudes on sustainability travels through environmental consciousness, so that cultivating consciousness is a genuine lever for sustainability rather than a mere correlate. On the other hand, the fact that the direct path remains significant, and that only about 16.2% of the total effect is mediated, indicates that green-space attitudes also act on sustainability through channels not captured in the present model, plausibly including institutional provision,

economic capacity, social norms, and civic participation. This pattern is consistent with contemporary mediation research, which increasingly treats consciousness and attitude as intermediate mechanisms in multi-path systems rather than as sole determinants (Khan, 2024; Preacher & Hayes, 2008). Substantively, the mediation supports the view that individuals with higher environmental consciousness are more likely to engage in sustainable practices, including advocacy for the creation and protection of urban green spaces, and that fostering environmental consciousness is therefore critical to converting favourable attitudes into sustainable outcomes.

Limitations of the Study

Several limitations should be borne in mind when interpreting these findings. First, the study employed a cross-sectional design, which captures relationships at a single point in time and therefore cannot establish causal direction with certainty; although the path model is framed in causal terms consistent with theory, longitudinal or experimental designs would be required to confirm the temporal ordering of attitudes, consciousness, and sustainable development. Second, the study was confined to a single location, Barangay Poblacion in the Municipality of Loreto, Agusan del Sur, and its Indigenous-majority composition, while a source of contextual richness, limits the generalizability of the results to other municipalities, regions, or urban settings; replication across diverse sites would strengthen external validity. Third, the data were gathered through self-report, which is susceptible to social-desirability bias, whereby respondents may over-report environmentally favourable attitudes and behaviours; future work could incorporate behavioural or observational measures to triangulate self-reported constructs. Finally, the model explains only part of the attitude–sustainability relationship, and additional mediators and moderators, such as environmental knowledge, income, institutional trust, and green self-efficacy (Khan, 2024), warrant investigation in subsequent studies. These limitations do not undermine the study’s contribution, but they do delimit the scope of its claims and chart a clear agenda for future research.

CONCLUSION

Drawing on the findings, this study reached several conclusions. The residents of Barangay Poblacion, Loreto, Agusan del Sur exhibited a high level of environmental consciousness, a high level of attitudes towards urban green space, and a high level of sustainable development, with the cultural dimension of sustainability standing out as very high in this Indigenous-majority community. Significant positive relationships were confirmed between attitudes towards urban green space and environmental consciousness, between environmental consciousness and sustainable development, and between attitudes towards urban green space and sustainable development. Most importantly, the study confirmed that environmental consciousness partially mediates the relationship between attitudes towards urban green space and sustainable development, transmitting approximately 16.2% of the total effect.

The principal contribution of the study is thus twofold. Empirically, it provides one of the few tests of the attitude–consciousness–sustainability pathway in a rural, Indigenous-majority Philippine local-government setting, thereby extending a literature that has been dominated by high-income and student populations. Theoretically, it demonstrates that environmental consciousness is not merely a correlate but an active intervening mechanism, and it foregrounds culture as a fourth pillar of sustainability whose salience in Indigenous communities is easily underestimated by conventional three-pillar frameworks. In practical terms, the partial-mediation result implies that interventions which strengthen residents’ environmental consciousness can amplify the sustainability dividends of their existing favourable attitudes towards green space, while the persistence of a direct effect signals that attitudinal and educational measures must be complemented by structural investments in green-space provision and access.

RECOMMENDATIONS

On the basis of the residents’ levels of awareness and the mediation established in this study, the following recommendations are offered to the local government of Loreto and to comparable local government units. First, policymakers should continue to implement policies that promote equitable access to high-quality green space and should actively engage local communities in the planning and management of these spaces, so that

the demonstrated favourable attitudes are matched by adequate physical provision consistent with the World Health Organization's benchmark of at least nine square metres of green space per person (Borowy, 2013).

Second, policymakers should prioritize infrastructure improvement not only in the expansion and accessibility of urban green space but across the full range of sustainable-development-goal infrastructure, recognizing, consistent with interaction-network evidence (Lusseau & Mancini, 2019), that progress on poverty and basic services reinforces environmental and cultural sustainability rather than competing with it.

Third, in view of the mediating role of environmental consciousness, the researcher recommends a sustained information-education-communication campaign on environmental consciousness, the importance of urban green space, and sustainable development. Such a campaign should be culturally responsive to the Indigenous majority of Poblacion, should mobilize schools, barangay institutions, and civil-society organizations, and should be designed to translate residents' awareness into concrete conservation and participation behaviours. Finally, future researchers are encouraged to adopt longitudinal or mixed-method designs, to test additional mediators and moderators, and to replicate the model across multiple municipalities so that its findings can be generalized and its policy value more fully realized.

ACKNOWLEDGMENT

The researcher would like to express his heartfelt gratitude to the following: Dr. Charlyn T. Gorgonio, the researcher's adviser, for her patience in guiding the researcher towards the completion of the study; Roque D. Castillo, Delia A. Castillo, Maria Diana Ruth A. Castillo, and Jayssame V. Castillo, the researcher's family, for being his inspiration to advance further in learning; and, above all, the Almighty God, for granting the desire for learning, wisdom, and knowledge. Thank you.

R.A.C.

Funding Source

The study was self-funded by the authors.

Conflict Of Interest

No potential conflict of interest was reported by the authors.

Author Contributions

Conceptualization, R.A.C.; methodology, R.A.C. and C.T.G.; validation, R.A.C. and C.T.G.; data collection, R.A.C.; formal analysis, R.A.C. and C.T.G.; draft preparation, R.A.C. and C.T.G.; review, C.T.G.; editing, R.A.C. Both authors have read and agreed to the submitted version of the manuscript.

REFERENCES

1. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
2. Akintunde, E. A. (2017). Theories and concepts for human behaviour in environmental preservation. *Journal of Environmental Science and Public Health*, 1(2), 120–133.
3. Afroz, N., & Ilham, Z. (2020). Assessment of knowledge, attitude and practice of university students towards sustainable development goals (SDGs). *The Journal of Indonesia Sustainable Development Planning*, 1(1), 31-44.
4. Armeanu, D. Ș., Vintilă, G., & Gherghina, Ș. C. (2018). Empirical study towards the drivers of sustainable economic growth in EU-28 countries. *Sustainability*, 10(1), 4.
5. Arvanitidis, P., Petrakos, G., Lalenis, K., & Psycharis, Y. (2009). Economic aspects of urban green space: A survey of perceptions and attitudes. *International Journal of Environmental Technology and Management*, 11(1/2/3), 143–168.

6. Balram, S., & Dragicevic, S. (2005). Attitudes toward urban green spaces: Integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. *Landscape and Urban Planning*, 71(2–4), 147–162.
7. Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
8. Berg, P. G., Hedfors, P., & Granvik, M. (2012). Functional density: A conceptual framework in a townscape areas context. *Nordic Journal of Architectural Research*, 24(2), 25–52.
9. Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, 19(12), 1207–1212.
10. Borowy, I. (2013). Defining sustainable development for our common future: A history of the World Commission on Environment and Development (Brundtland Commission). Routledge.
11. Bugday, E. B. (2016). Conscious consumer scale: The study of validity and reliability. *Asian Journal of Social Sciences and Humanities*, 5(2), 1–10.
12. Cilliers, S., Cilliers, J., Lubbe, R., & Siebert, S. (2013). Ecosystem services of urban green spaces in African countries, Perspectives and challenges. *Urban Ecosystems*, 16(4), 681–702.
13. Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
14. Crespo, B., Álvarez, C., Arce, I., Cuevas, M. E., & Míguez, J. L. (2017). The sustainable development goals: An experience on higher education. *Sustainability*, 9(8), 1353.
15. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
16. Chukharev, S. M., Sakhno, S. I., Striuk, A. M., Iatsyshin, A. V., Klimov, S. V., Osadchyi, V. V., ... & Artemchuk, V. O. (2023). 4th International Conference on Sustainable Futures: Environmental, Technological, Social and Economic Matters.
17. D’Attoma, I., & Ieva, M. (2024). A new composite index to assess environmental consciousness using survey data and big data: Empirical evidence from European consumers. *Socio-Economic Planning Sciences*, 95, 101960.
18. Dempsey, N., Bramley, G., Power, S., & Brown, C. (2011). The social dimension of sustainable development: Defining urban social sustainability. *Sustainable Development*, 19(5), 289–300.
19. Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425–442.
20. Eren, B., & Yaqub, M. (2015). Environmental consciousness survey of university students. Sakarya University, Faculty of Engineering, Department of Environmental Engineering.
21. Farahani, L. M., & Maller, C. (2018). Perceptions and preferences of urban greenspaces: A literature review and framework for policy and practice. *Landscape Online*, 61, 1–22.
22. Garcia, E., & Luansing, B. (2016). Environmental awareness among selected graduating college students in Region IV-A. *LPU–Laguna Journal of Multidisciplinary Research*, 5(1), 1–10.
23. Gericke, N., Boeve-de Pauw, J., Berglund, T., & Olsson, D. (2019). The sustainability consciousness questionnaire: The theoretical development and empirical validation of an evaluation instrument for stakeholders working with sustainable development. *Sustainable Development*, 27(1), 35–49.
24. Haq, S. M. A. (2011). Urban green spaces and an integrative approach to sustainable environment. *Journal of Environmental Protection*, 2(5), 601–608.
25. Haq, S. M. A., Islam, M. N., Siddhanta, A., Ahmed, K. J., & Chowdhury, M. T. A. (2021). Public perceptions of urban green spaces: Convergence and divergence. *Frontiers in Sustainable Cities*, 3, 755313.
26. Hawkes, J. (2001). *The fourth pillar of sustainability: Culture’s essential role in public planning*. Common Ground Publishing.
27. Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.
28. Holt, E. W., Lombard, Q. K., Best, N., Smith, S., & Quinn, J. E. (2019). Active and passive use of green space, health, and well-being among university students. *International Journal of Environmental Research and Public Health*, 16(3), 424.

29. Howes, M., Wortley, L., Potts, R., Dedekorkut-Howes, A., Serrao-Neumann, S., Davidson, J., Smith, T., & Nunn, P. (2017). Environmental sustainability: A case of policy implementation failure? *Sustainability*, 9(2), 165.
30. Ivanov, I., Frolova, L., Prokopenko, N., Belyanovskaya, O., & Prokopenko, O. (2020). The study of the level of environmental consciousness and efficiency of environmental education of students. *Ukrainian Journal of Ecology*, 10(2), 32–37.
31. Jansson, M. (2014). Green space in compact cities: The benefits and values of urban ecosystem services in planning. *Nordic Journal of Architectural Research*, 26(2), 139–160.
32. Johansson, K. (2016). Understanding recycling behaviour: A study of motivational factors behind waste recycling. *WIT Transactions on Ecology and the Environment*, 202, 401–414.
33. Kanapathy, S., Lee, K. E., Sivapalan, S., Mokhtar, M., Syed Zakaria, S. Z., & Mohd Zahidi, A. (2019). Sustainable development concept awareness among students in higher education: A preliminary study. *Journal of Sustainability Science and Management*, 14(1), 214–224.
34. Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3), 169–182.
35. Khan, A. N. (2024). Elucidating the effects of environmental consciousness and environmental attitude on green travel behavior: Moderating role of green self-efficacy. *Sustainable Development*, 32(3), 2223–2232.
36. Kruja, A. (2013). Sustainable economic development, a necessity of the 21st century. *Mediterranean Journal of Social Sciences*, 4(10), 93–99.
37. Lampert, M., & Papadongonas, P. (2016). Towards 2030 without poverty: Increasing knowledge of progress made towards the Sustainable Development Goals. *Glocalities & Earth Charter International*.
38. Langley, J. (2012). Is green a grey area? Sustainability and inclusivity: Recycling and the ageing population. *The Design Journal*, 15(1), 33–56.
39. Lee, Y.-C., & Kim, K.-H. (2015). Attitudes of citizens towards urban parks and green spaces for urban sustainability: The case of Gyeongsan City, Republic of Korea. *Sustainability*, 7(7), 8240–8254.
40. Lusseau, D., & Mancini, F. (2019). Income-based variation in Sustainable Development Goal interaction networks. *Nature Sustainability*, 2(3), 242–247.
41. Mathur, V., & Kumari, K. M. (2013). Environmental consciousness: An indicator of higher consciousness. *International Journal of Scientific and Research Publications*, 3(6), 1–5.
42. Moran, E. F. (2010). *Environmental social science: Human–environment interactions and sustainability*. Wiley-Blackwell.
43. Mostafa, M. M. (2007). A hierarchical analysis of the green consciousness of the Egyptian consumer. *Psychology & Marketing*, 24(5), 445–473.
44. Municipality of Loreto. (2019). *Ecological profile of Loreto, Agusan del Sur*. Local Government Unit of Loreto.
45. Nasir, M. R. M., & Rahim, A. A. (2020). Community attitude towards urban green-blue space and perceived cultural ecosystem benefits: A preliminary study at Taiping Lake Garden, Perak, Malaysia. *Malaysian Journal of Social Sciences and Humanities*, 5(11), 228–239.
46. Noor, S., Tajik, O., & Golzar, J. (2022). Simple random sampling. *International Journal of Education and Language Studies*, 1(2), 78–82.
47. Oke, A. (2015). Workplace waste recycling behaviour: A meta-analytical review. *Sustainability*, 7(6), 7175–7194.
48. Oliveira, S. V. W. B. (2012). Conscious consumption: A study on plastic bag consumers in Brazil. *International Journal of Psychological Studies*, 4(1), 122–131.
49. Olfato-Parojinog, A., Dagamac, N. H. A., & Limbo-Dizon, J. E. (2024). Assessment of urban green spaces per capita in a megacity of the Philippines: implications for sustainable cities and urban health management. *GeoJournal*, 89(3), 94.
50. Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891.
51. Rogayan, D. V., & Nebrida, E. E. (2019). Environmental awareness and practices of science students: Input for ecological plan. *International Electronic Journal of Environmental Education*, 9(2), 106–119.

52. Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21(4), 327–339.
53. Shi, L., Han, L., Yang, F., & Gao, L. (2019). The evolution of sustainable development theory: Types, goals, and research prospects. *Sustainability*, 11(24), 7158.
54. Siragusa, A., Vizcaino, P., Proietti, P., & Lavallo, C. (2020). European handbook for SDG voluntary local reviews. Publications Office of the European Union.
55. Su, K., Ren, J., Cui, C., Hou, Y., & Wen, Y. (2022). Do value orientations and beliefs play a positive role in shaping personal norms for urban green space conservation? *Sustainability*, 14(1), 262.
56. Terrell, P. G. (2009). Want sustainable development? Assess impact first [Doctoral dissertation, University of Massachusetts Lowell].
57. Tural, A., & Turan, H. (2024). The relationship between sustainable consciousness and environmental awareness sensitivity level in the context of sustainable development. *Anadolu University Journal of Education Faculty*, 8(2).
58. Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science*, 224(4647), 420–421.
59. Van der Stoep, S. W., & Johnston, D. D. (2009). *Research methods for everyday life: Blending qualitative and quantitative approaches*. Jossey-Bass.
60. Zwickle, A., Koontz, T. M., Slagle, K. M., & Bruskotter, J. T. (2014). Assessing sustainability knowledge of a student population. *International Journal of Sustainability in Higher Education*, 15(4), 375–389.