

Structural Validation of Measures on Neighborhood Crime in Davao Region: A Confirmatory Factor Analysis

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Abstract: This study examined the structural validity of neighborhood crime measures in the Davao Region using Confirmatory Factor Analysis (CFA). Specifically, the study sought to confirm the factor structure identified by España and Nabe (2023), determine model fit, assess construct reliability, examine correlations among latent constructs, and develop a validated framework of neighborhood crime applicable to the Davao Region. A quantitative, non-experimental research design was employed, involving 400 adult residents selected through stratified random sampling across the provinces of the Davao Region. Data were gathered using a 5-point Likert-scale instrument adapted from the exploratory factor analysis (EFA) study of España and Nabe (2023). Results confirmed a four-factor structure consisting of Breakdown of Social Control, Social Disorder, Social Deviance, and Social Disintegration. All retained indicators demonstrated statistically significant factor loadings ($p < .001$) and acceptable convergent validity. Reliability analysis revealed high internal consistency across constructs, while the overall scale demonstrated excellent reliability. The initial measurement model showed a poor fit; however, successive refinements, including the deletion of weak indicators and the inclusion of theoretically justified error correlations, significantly improved it. The final model achieved satisfactory goodness-of-fit indices, indicating a well-fitting measurement structure. The findings establish a psychometrically sound and multidimensional framework for measuring neighborhood crime in the Davao Region. The study contributes to criminological measurement research by providing a validated regional instrument that may support evidence-based crime prevention policies, community safety programs, and future neighborhood crime studies.

Keywords: Criminal Justice, Neighborhood Crime, Confirmatory Factor Analysis, Structural Validation, Reliability, Philippines.

SDG Indicator: #16 (Peace, Justice, and Strong Institutions)

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I. INTRODUCTION

Several empirical studies still rely heavily on administrative records or single-item perceptions to measure “neighborhood crime,” but these sources often tell different stories. Police-recorded crime reflects reporting practices, policing priorities, and population exposure rather than true victimization risk, while resident perceptions reflect fear, media exposure, and social interpretation of disorder, so objective and subjective indicators frequently diverge. Recent work shows that activity-adjusted and multi-source measures can produce substantially different spatial and temporal patterns of crime, highlighting the risk of biased inference when only one type of measure is used (Massenkoff & Chalfin, 2022).

Moreover, several commonly used neighborhood-crime instruments are psychometrically under-tested for structural validity, dimensionality, and invariance in local contexts.

Constructs such as “fear of crime,” “perceived disorder,” “collective efficacy,” and “perceived safety” are multidimensional, and item sets developed elsewhere do not always show the same factor structure when applied to new populations. This creates problems for comparing groups unless measurement invariance is explicitly tested; several recent methodological reviews therefore stress routine use of exploratory and confirmatory factor analysis and formal invariance testing in cross-group and longitudinal work (Etopio & Bethelot, 2022).

Furthermore, applied research in specific regions, including rapidly urbanizing areas such as the Davao Region, is often hampered by a lack of locally validated scales and the appeal to import measures without structural validation. Studies that combine resident perceptions with objective indicators or that develop context-sensitive indices from administrative and open data show promise, but they also underscore the need for rigorous scale validation before using

measures in multivariate models or for policy evaluation (Geron et al., 2023).

Despite extensive research, inconsistencies in measuring neighborhood crime from reliance on police data to unvalidated scales limit accuracy and policy relevance. These gaps underscore the need for a confirmatory factor analysis to establish valid and reliable measures tailored to the Davao Region, ensuring that research and interventions reflect local crime realities.

II. REVIEW OF RELATED LITERATURE

Understanding neighborhood crime requires not only examining its incidence but also ensuring that the measures used to capture it are valid, reliable, and context sensitive. In a study by España and Nabe (2023), a multidimensional measure of neighborhood crime was developed specifically for the context of Davao City. Through exploratory factor analysis on responses from 300 residents, they identified four constructs: breakdown of social control, social disorder, social deviance, and social disintegration.

To corroborate further, Geron et al. (2023) introduced the Neighborhood Sentiment and Safety Index (NSSI), which combined perception-based and objective indicators to assess safety across different neighborhoods. Using confirmatory factor analysis (CFA), they validated the index's multidimensional structure, demonstrating that fear of crime, disorder, and trust in institutions can be statistically distinguished yet remain interconnected. This study highlights the importance of integrating both subjective and objective measures when analyzing neighborhood crime, particularly in urban areas where perceptions of disorder may shape residents' actual sense of safety.

The findings of Jamalishahni et al. (2024) also further distinguished between perceived and objective crime in shaping neighborhood experiences. Their study demonstrated that residents' perceptions of crime often have a stronger influence on fear, trust, and social participation than official crime rates. Similarly, McClanahan et al. (2024) employed experimental methods to validate scales of fear of crime and environmental disorder cues, finding strong factorial validity across measures of lighting, graffiti, and loitering.

Local evidence also supports the need for region-specific validation. Escriba et al. (2024), in a study on police visibility and neighborhood crime in selected barangays of Davao City, used survey-based measures and highlighted their relevance to urban safety dynamics. Although primarily descriptive, the study reinforces the applicability of psychometric approaches, such as CFA, to strengthen the reliability and validity of neighborhood-crime indicators in the local setting.

➤ Theoretical Framework

The present study is anchored on Social Disorganization Theory (Shaw & McKay, 1942), which explains how neighborhood structural conditions, such as poverty, residential instability, and weakened social networks,

contribute to higher levels of crime and disorder. According to Shaw and McKay, and later expanded by Sampson and Groves (1989), communities with limited social cohesion and weakened informal social controls are more vulnerable to criminal activities. This theoretical lens underscores the need to structurally validate neighborhood-crime measures, as crime in communities cannot be fully understood through statistics alone and must also account for perceptions of disorder, cohesion, and safety. In the context of the Davao Region, this theory highlights the influence of local community structures on both actual crime rates and residents' fear of crime.

To strengthen this foundation, the study also draws from Collective Efficacy Theory by Sampson, Raudenbush, and Earls (1997), which builds upon social disorganization by emphasizing trust among residents and their shared willingness to intervene for the common good. This theory justifies the inclusion of constructs such as cohesion, neighborhood trust, and informal social control in the measurement model, recognizing that these social mechanisms are integral to understanding neighborhood safety.

Moreover, the Routine Activity Theory of Cohen and Felson (1979) complements this by focusing on the environmental and situational conditions that facilitate or deter crime. By considering everyday activities, capable guardianship, and opportunities for offending, this perspective supports the inclusion of indicators related to environmental cues and police visibility in neighborhood-crime measures.

➤ Conceptual Framework

The conceptual framework of this study, shown in Figure 1, illustrates a second-order confirmatory factor analysis (CFA) model designed to explain the latent construct of *Neighborhood Crime*. At the highest level, *Neighborhood Crime* is represented as a second-order factor, not directly observable but measured through multiple first-order factors: Breakdown of Social Control, Social Disorder, Social Deviance, and Social Disintegration. Each first-order factor reflects a specific dimension of neighborhood crime and is itself measured through several observed indicators or items. These observed items represent survey responses or behavioral measures that serve as proxies for the underlying dimension of crime. Each item is also linked to an error term that accounts for measurement error and unexplained variance.

By using this second-order Confirmatory Factor Analysis (CFA) structure, the model emphasizes that neighborhood crime is not a single-dimensional phenomenon but rather emerges from multiple interrelated factors, such as breakdown of social control, community disintegration, social disorder, social deviance, or other dimensions depending on the study context (España & Nabe, 2023). This framework provides a theoretically grounded way to validate whether these observed patterns of crime align with the broader conceptualization of neighborhood crime.

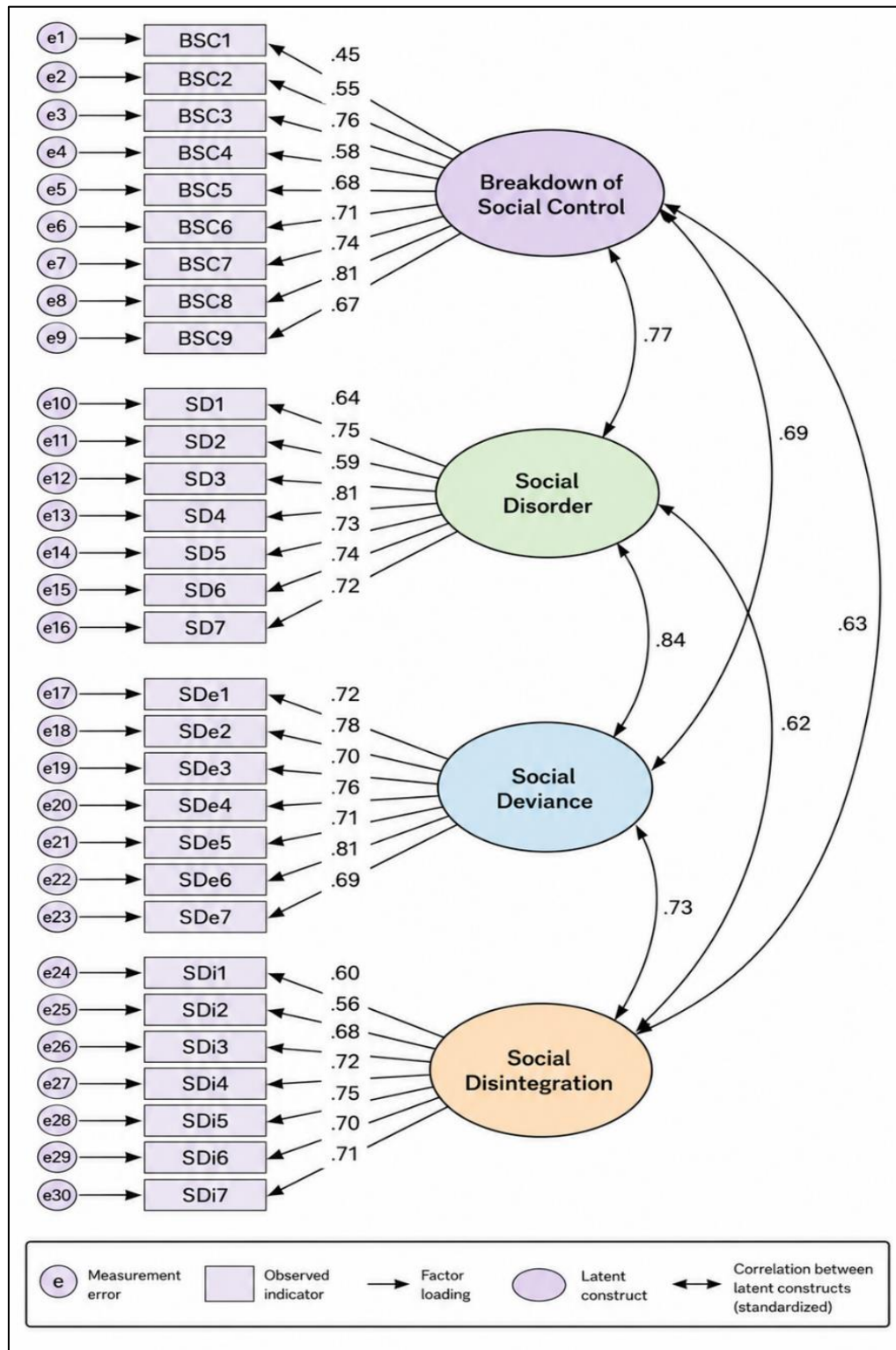


Fig 1 Hypothetical Observed Factors of Latent Constructs of Neighborhood Crime

The lack of a validated measurement scale for neighborhood crime in this broader geographical context hinders the development of evidence-based crime prevention strategies and resource allocation. Additionally, the reliability and credibility of existing crime data are in question, making it essential to establish a validated measurement scale through confirmatory factor analysis (CFA). Without this, efforts to combat crime and improve community safety in the Davao Region may remain fragmented and less effective, ultimately

affecting residents' quality of life and the region's overall development.

➤ Research Objectives

The general objective of this study is to confirm and validate the factor structure of the neighborhood crime scale developed by España and Nabe (2023) using confirmatory factor analysis (CFA) among residents of Davao Region. Specifically, this study aims: (1) to determine the model fit of

the neighborhood crime measurement model using CFA; (2) to confirm the factor structure of neighborhood crime; (3) to assess the reliability of the finalized neighborhood crime constructs; (4) to examine the correlations among the latent constructs of neighborhood crime; (5) to develop a validated framework of neighborhood crime context-specific to Davao Region.

This study assumes that respondents can provide accurate and honest assessments of neighborhood crime conditions based on their lived experiences. It is also assumed that the factor structure identified by España and Nabe is theoretically sound and transferable to a broader population within the Davao Region. Further, the study assumes that respondents interpret the survey items consistently, that the collected data meet the statistical assumptions required for confirmatory factor analysis, and that the sample size is sufficient to yield stable and reliable parameter estimates.

➤ *Significance of the Study*

This research aligns with Sustainable Development Goal (SDG) 16: Peace, Justice, and Strong Institutions by contributing to the development of safer, more secure communities through evidence-based assessments of neighborhood crime. The findings can support policymakers, law enforcement agencies, and local government units in designing informed crime-prevention strategies, strengthening public safety initiatives, and enhancing institutional capacity to maintain peace, justice, and effective governance. By providing a validated tool for assessing neighborhood crime, the study promotes data-driven decision-making that supports inclusive, peaceful, and resilient communities.

Moreover, this study will benefit various sectors in meaningful ways. For community residents, it offers a clearer understanding of crime dynamics within their neighborhoods, which can help build stronger social cohesion and promote collective safety initiatives. Local government units and policymakers can use the findings as a foundation for crafting evidence-based policies, ordinances, and community programs that more effectively address the root causes of crime and allocate resources efficiently. Law enforcement agencies also stand to benefit by applying validated measures in crime mapping and prevention strategies, enhancing their ability to prioritize interventions and strengthen community policing. At the academic level, researchers and students gain from the study's contribution to criminological knowledge, as it provides a validated framework for future inquiries and serves as a reference for those studying crime, social behavior, and community resilience.

III. METHOD

This section presents the research methodology employed in the study, detailing the procedures used to examine and validate neighborhood crime measures in Davao City through confirmatory factor analysis (CFA). It outlines the research respondents, materials and instruments, the research design, and the data collection procedure.

➤ *Research Respondents*

The respondents in this study were adult residents from selected communities in the Davao Region, including Davao City and the provinces of Davao del Norte, Davao del Sur, Davao de Oro, Davao Oriental, and Davao Occidental. The respondents were selected to provide informed perceptions and experiences regarding neighborhood crime conditions in their respective localities. Their responses are essential in validating the measurement model of neighborhood crime constructs examined in this study.

A sample size of 400 respondents was targeted for this study. This sample size is considered appropriate and robust for confirmatory factor analysis (CFA) involving multiple latent variables and observed indicators. Methodological guidelines recommend a minimum of 200 respondents for CFA, while larger samples of 300-400 or more are preferred to ensure stable parameter estimates, reliable goodness-of-fit indices, and improved generalizability of results (Kline, 2023; Hair et al., 2019). Given the complexity of the measurement model and the regional stratification of respondents, a sample size of at least 400 respondents was deemed sufficient to support the study's objectives.

This study employed stratified random sampling. The population was first stratified by geographic location, specifically, Davao City and the provinces comprising the Davao Region. Each stratum was allocated a portion of the total sample, ensuring representation across different provinces and urban contexts. Within each stratum, respondents were selected from chosen barangays based on the inclusion criteria. Stratified sampling is particularly suitable for geographically diverse populations, as it enhances representativeness by ensuring that key subgroups are adequately represented (Creswell & Creswell, 2018).

Adult residents aged 18 years and above who have been living in their respective communities in the Davao Region, including Davao City and the provinces of Davao del Norte, Davao del Sur, Davao de Oro, Davao Oriental, and Davao Occidental, for at least six (6) months to one (1) year were included in the study. Only individuals who could understand and complete the survey questionnaire and who voluntarily provided informed consent were allowed to participate. Individuals below 18 years of age, those who had resided in the community for less than six months, and those who were unable to complete the questionnaire due to comprehension difficulties were excluded from the study. Participation was entirely voluntary, and respondents were informed that they could withdraw from the study at any time without penalty or consequences if they felt uncomfortable or decided not to continue.

➤ *Materials and Instrument*

The primary instrument for this study was an EFA scale developed by España and Nabe (2023) to capture the multidimensional structure of crime-related measures. The instrument was designed to measure the multidimensional nature of neighborhood crime and initially demonstrated satisfactory psychometric properties, identifying four latent dimensions: Breakdown of Social Control, Social Disorder,

Social Deviance, and Social Disintegration. These dimensions served as the basis for the present Confirmatory Factor Analysis (CFA) to validate the factor structure among residents in the Davao Region.

Prior to data collection, the instrument underwent content validation by experts in criminology and research methodology to ensure the relevance, clarity, and appropriateness of the questionnaire items for the study context. Suggestions provided by the validators were incorporated into the final version of the instrument before its administration. The results of the content validation are presented in the appendices of this manuscript.

The finalized survey used a 5-point Likert scale to measure residents' level of agreement with statements describing neighborhood crime. Responses were interpreted as follows: mean scores of 4.21-5.00 indicate very high agreement, indicating that the statement accurately describes neighborhood crime. Scores between 3.41 and 4.20 reflect high agreement, suggesting that the statement describing neighborhood crime is fairly accurate. Mean scores of 2.61 to 3.40 indicate moderate agreement, meaning that the statement somehow describes the variable. Scores ranging from 1.81 to 2.60 indicate low agreement, suggesting that it is not clear whether the statement accurately describes the neighborhood's crime. Finally, mean scores between 1.00 and 1.80 indicate very low agreement, indicating that the statement does not describe neighborhood crime.

To establish the instrument's psychometric properties, construct validity was evaluated using Confirmatory Factor Analysis (CFA), examining standardized factor loadings and model fit indices. The internal consistency of the finalized constructs was assessed using Cronbach's alpha, while convergent validity was evaluated through factor loadings. The finalized measurement model demonstrated satisfactory validity and high reliability, confirming that the instrument is appropriate for assessing neighborhood crime among residents of the Davao Region.

➤ *Design and Procedure*

This study employed a quantitative, non-experimental research design utilizing Confirmatory Factor Analysis (CFA) to validate the factor structure of neighborhood crime identified in the exploratory factor analysis (EFA) conducted by España and Nabe (2023). CFA is a statistical technique used to test whether observed variables adequately represent hypothesized latent constructs, grounded in existing theoretical and empirical foundations (Brown, 2015). The study specifically examined whether the four-factor model consisting of breakdown of social control, social disorder, social deviance, and social disintegration fits the data gathered from residents of the Davao Region.

The statistical analyses employed in the study focused primarily on confirmatory factor analysis procedures. Reliability analysis using Cronbach's alpha was conducted to determine the internal consistency of each construct. CFA was then performed to evaluate the adequacy of the measurement model using model fit indices such as Chi-

square/degrees of freedom (χ^2/df), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), and PCLOSE. Model modifications were performed based on modification indices and theoretical justification to achieve an acceptable model fit (Kline, 2016).

Prior to data collection, the survey instrument, adapted from España and Nabe (2023), underwent expert validation to ensure content appropriateness and contextual relevance. The researcher obtained ethical clearance from the University of Mindanao Ethics Review Committee (UMERC) under protocol number 2026-048 before conducting the study. After obtaining approval and endorsement from the Professional Schools, permission to conduct the study was sought from the appropriate local authorities and barangay officials within the selected communities of the Davao Region.

Data collection was conducted through face-to-face administration of questionnaires among qualified respondents who voluntarily agreed to participate in the study. Only fully completed questionnaires were included in the final analysis. The collected data was coded, screened, and analyzed statistically to assess the structural validity and reliability of the neighborhood crime measurement model.

The researcher strictly adhered to the ethical standards in conducting this study, in accordance with the University of Mindanao Ethics Review Committee (UMERC) Protocol No. 2026-048. Ethical principles, including voluntary participation, informed consent, privacy and confidentiality, and data protection, were upheld throughout the research process. Participants were fully informed about the purpose, procedures, benefits, and minimal risks of the study, and were given the freedom to decline or withdraw from participation at any time without penalty. In compliance with the Data Privacy Act of 2012, all responses were treated with utmost confidentiality, and no identifying information was disclosed or included in the analysis. Data gathered through the survey questionnaire were securely stored in password-protected files accessible only to the researcher and were used solely for academic purposes. The study posed minimal risk, although some participants may have experienced mild discomfort when answering questions about neighborhood crime; therefore, they were allowed to skip any question they found uncomfortable. No deception, fabrication, falsification, or plagiarism was committed in the conduct of the study, and all findings were honestly reported based on actual responses collected from the participants. Necessary permissions from appropriate local authorities were secured prior to data collection, and all procedures were conducted in a respectful, ethical, and professional manner to protect the rights, dignity, and welfare of the respondents.

IV. RESULTS AND DISCUSSIONS

The results and discussion are presented in accordance with the study's objectives. The analysis begins with the evaluation and refinement of the neighborhood crime measurement model using Confirmatory Factor Analysis (CFA), followed by confirmation of the factor structure,

reliability assessment, examination of correlations among latent constructs, and development of a validated framework applicable to the Davao Region.

➤ Model Fit and Refinement of the Neighborhood Crime Model

The overall fit of the neighborhood crime measurement model identified by España and Nabe (2023) was evaluated using established goodness-of-fit indices in Confirmatory Factor Analysis (CFA). Model fit evaluation is a critical component of CFA because it determines whether the hypothesized latent structure adequately represents the observed data. In structural validation studies, achieving model fit indicates that the relationships among indicators and constructs are theoretically and statistically acceptable (Hair et al., 2019).

Table 1 presents the progression of model fit indices across the different stages of model refinement, illustrating how the initial measurement model was improved through successive modifications until an acceptable, and eventually a good-fitting, model was achieved. In the initial model, the original Exploratory Factor Analysis (EFA) structure was tested using Confirmatory Factor Analysis (CFA). The results indicated poor model fit, as reflected by the high chi-square value ($\chi^2 = 1388.29$) and the χ^2/df ratio of 3.61, both exceeding the acceptable thresholds of 3.00. Furthermore, the Goodness-of-Fit Index (GFI = 0.80) and Comparative Fit Index (CFI = 0.85) were below the recommended minimum criterion of 0.90. Although the RMSEA value of 0.08 fell within the marginally acceptable range, the PCLOSE value of 0.00 indicated poor model approximation.

Table 1 Progression of Model Fit Indices Across Model Refinement Stages

Model Stage	Modification Performed	χ^2	χ^2/df	GFI	CFI	RMSEA	PCLOSE	Interpretation
Initial Model	Original EFA Structure Tested	1388.29	3.61	0.80	0.85	0.08	0.00	Poor Fit
Model 2	Removal of Weak Indicators	283.10	2.51	0.93	0.953	0.061	0.018	Acceptable Fit
Model 3	Correlation of Theoretically Related Error Terms	203.41	1.94	0.95	0.97	0.048	0.587	Good Fit
Acceptable Values		< 3.00		≥ 0.90	≥ 0.90	< 0.08	> 0.05	
Good Fit Values		$p < 0.05$		≥ 0.95	≥ 0.95	< 0.08	> 0.05	

These findings suggest that the initial measurement model did not adequately represent the observed data, thereby necessitating model respecification and refinement. This process is consistent with the iterative nature of Confirmatory

Factor Analysis, in which researchers refine and modify models based on theoretical and statistical considerations to achieve better construct representation and an acceptable model fit, as emphasized by Kline (2023).

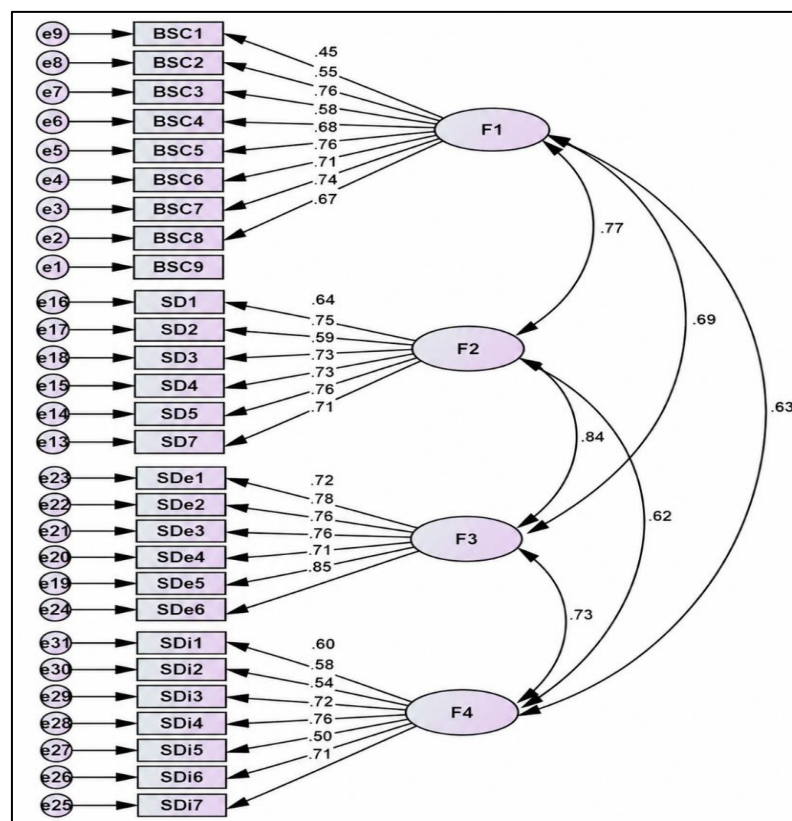


Fig 2 Initial Measurement Model of Neighborhood Crime

The improvement in model fit demonstrates the importance of iterative validation in psychometric model development. Recent studies in structural equation modeling and criminological measurement similarly emphasize that theoretically guided model refinement is necessary to achieve empirical adequacy, reliability, and construct validity in latent-variable models (Kline, 2023).

In Model 2, as presented in Figure 3, weak indicators with low factor loadings were removed, resulting in a

substantial improvement in model fit. The χ^2 value significantly decreased to 283.10, while the χ^2/df improved to 2.51, which already fell within the acceptable threshold. Likewise, the GFI increased to 0.93, and the CFI improved to 0.953, both exceeding the recommended criterion of 0.90. The RMSEA further decreased to 0.061, indicating a reasonable fit between the model and the observed data. However, the PCLOSE value of 0.018 still suggested that the model had not yet achieved a close fit.

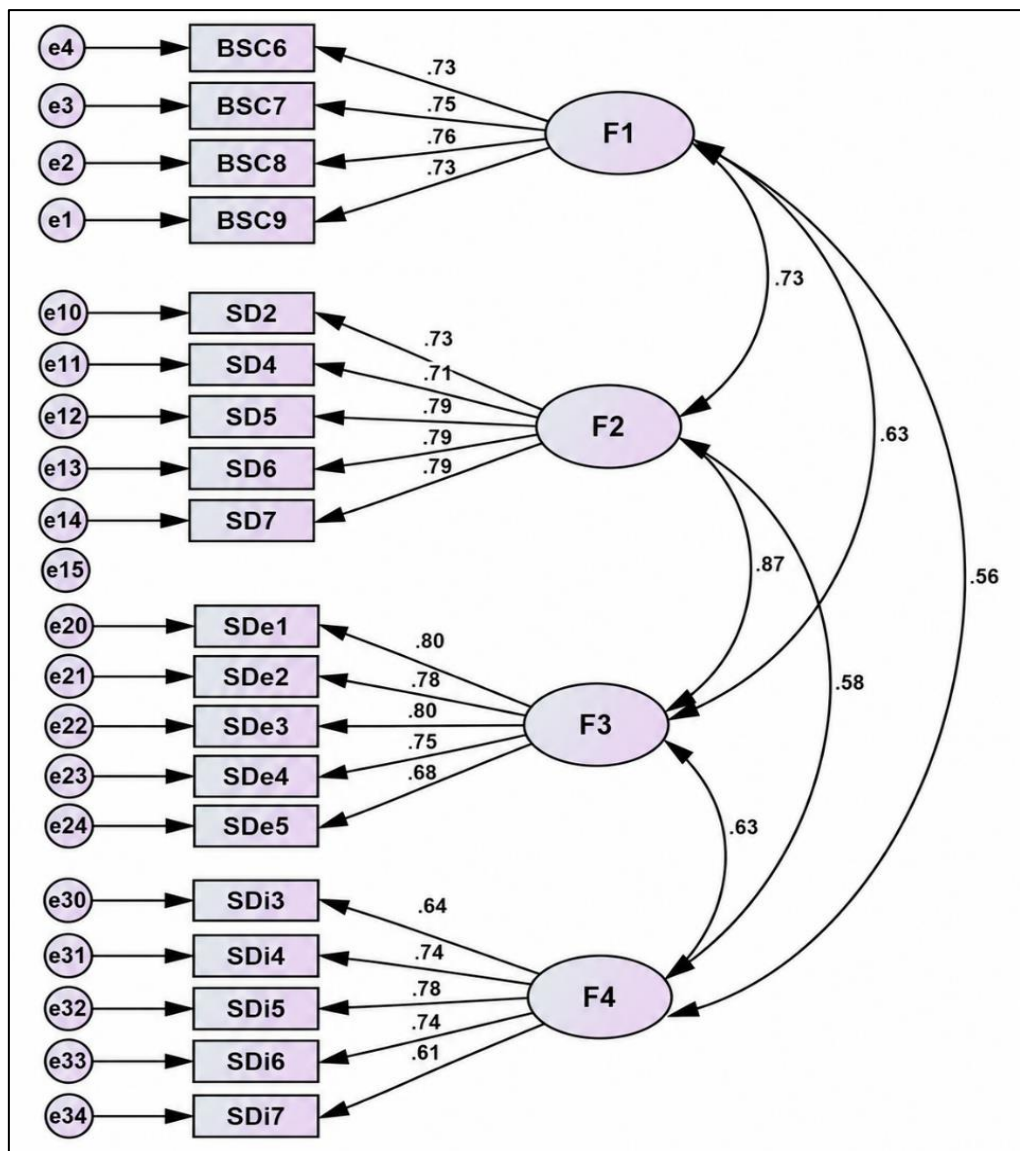


Fig 3 Revised Measurement Model after Deletion of Weak Indicators (Model 2)

The removal of weak indicators is consistent with established scale refinement procedures observed in the studies by Mondejar and Gono Jr. (2025), Cambalon and Gono Jr. (2025), and Leron and Gono (2025), in which problematic or low-loading indicators were eliminated to

strengthen construct validity and improve overall model performance by correlating theoretically related error terms within the same construct, guided by modification indices and supported by conceptual similarity among indicators.

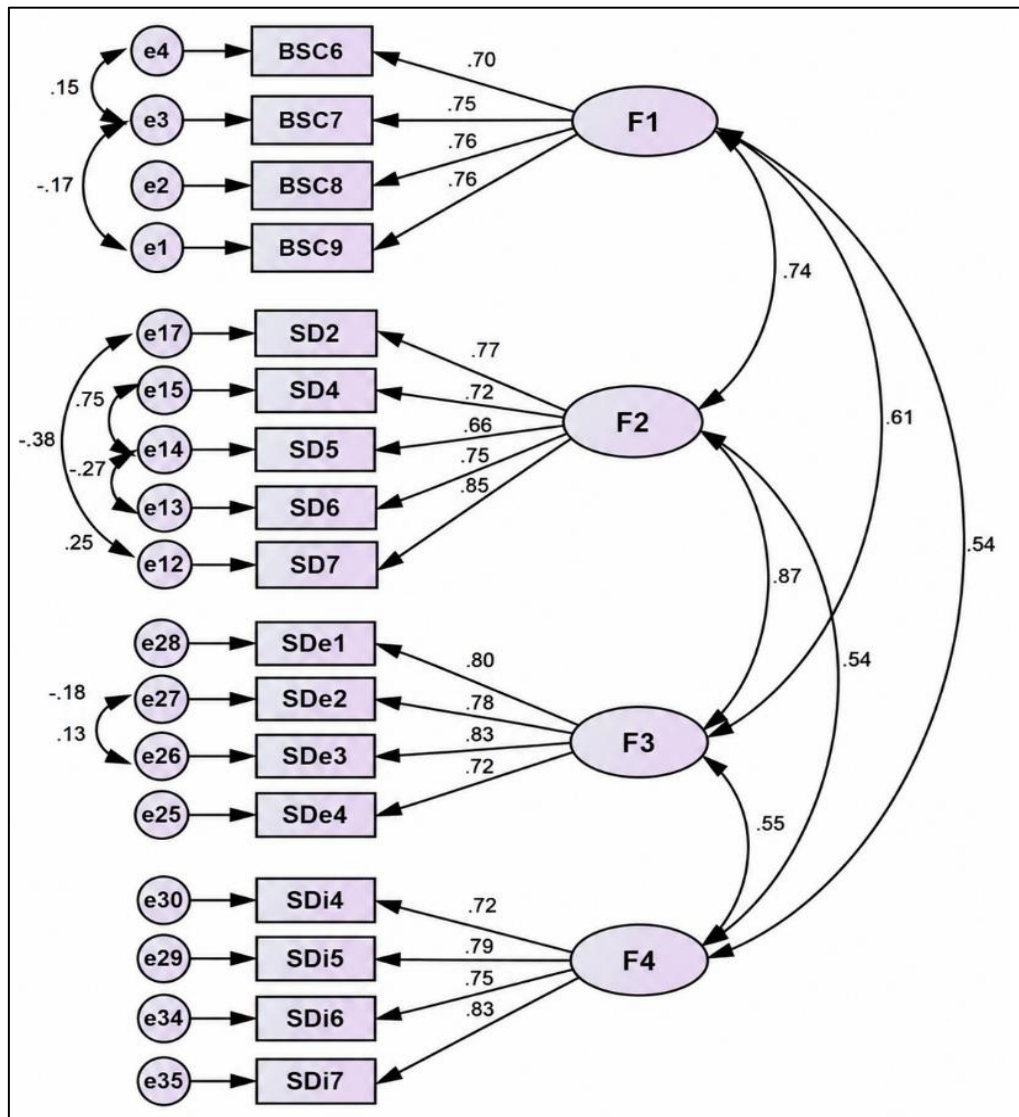


Fig 4 Final Measurement Model after Additional Item Removal (Model 3)

Further improvement was achieved in Model 3, as reflected in Figure 4. This refinement yielded a χ^2 value of 203.41 and a χ^2/df of 1.94, indicating a good-fitting model. Moreover, the GFI (0.95) and CFI (0.97) both indicated a good fit, while the RMSEA decreased to 0.048, indicating a close fit between the model and the observed data.

Notably, the PCLOSE value increased to 0.587, exceeding the 0.05 threshold and confirming the model's close fit. The practice of correlating error terms among theoretically related indicators has also been applied in studies such as Hebrona and Gono Jr. (2025) and Gono Jr. and Abalos (2023), wherein model respecification procedures were employed to improve model fit without compromising

theoretical integrity. Such modifications are considered acceptable in structural equation modeling when they are supported by both empirical evidence and theoretical justification.

To sum up, Table 2 presents the final fit indices for the validated neighborhood crime measurement model. The results revealed that all fit indices met the recommended thresholds: $\chi^2/\text{df} = 1.94$, GFI = 0.95, CFI = 0.97, RMSEA = 0.048, and PCLOSE = 0.587, indicating that the final model achieved satisfactory and statistically acceptable fit across all major goodness-of-fit indices, confirming that the proposed measurement structure adequately represented the observed data.

Table 2 Final Model Fit Indices of the Neighborhood Crime Measurement Model

Fit Index	Final Result	Acceptable Value	Interpretation
χ^2/df	1.94	< 3.00	Good Fit
GFI	0.95	≥ 0.90	Good Fit
CFI	0.97	≥ 0.95	Excellent Fit
RMSEA	0.048	< 0.08	Close Fit
PCLOSE	0.587	> 0.05	Good Fit

The progressive improvement observed across the stages of model refinement underscores the importance of iterative testing and modification in achieving a parsimonious, empirically supported final measurement model (Figure 4). This process aligns with the work of Gono Jr. and Pacoy (2021), who emphasized the need for rigorous validation procedures to develop meaningful and reliable measurement models. Moreover, guided by established fit indices such as GFI, CFI, RMSEA, and PCLOSE, the final model confirms that the interrelationships among the latent variables are adequately represented, thereby supporting the overall structural adequacy of the model, consistent with the view that acceptable model fit indicates that the hypothesized relationships among latent constructs are empirically supported and theoretically meaningful, as discussed by Kline (2023).

➤ *Confirmation of the Factor Structure of Neighborhood Crime in Davao Region Using Confirmatory Factor Analysis (CFA)*

After determining the final model, the next objective was to confirm the factor structure of neighborhood crime

using Confirmatory Factor Analysis (CFA). The original exploratory study identified four latent dimensions of neighborhood crime, namely: Breakdown of Social Control, Social Disorder, Social Deviance, and Social Disintegration.

Confirmatory Factor Analysis was employed to verify whether the proposed four-factor structure adequately fits the empirical data gathered from respondents in the Davao Region. CFA is regarded as a robust statistical procedure for assessing whether observed indicators significantly represent hypothesized latent constructs (Hair et al., 2019). Unlike Exploratory Factor Analysis, which explores possible factor structures, CFA tests whether a theoretically grounded model is statistically supported by the data.

The initial measurement model included all retained indicators from the EFA study. However, the preliminary CFA results indicated that several indicators had weak factor loadings, contributing to poor model fit. Consequently, model refinement procedures were undertaken through iterative modifications guided by standardized regression weights, modification indices, and theoretical relevance.

Table 3 Standardized Factor Loadings and Significance of the Neighborhood Crime Measurement Model

Factors	Code	Item Statements	Estimate	S.E.	C.R.	p-value
Breakdown of Social Control (F1)	BSC9	Indifference of barangay/community leaders to the peace and order situation of their jurisdiction	1.000	—	—	—
	BSC8	Absence of police outposts.	0.915	0.065	14.155	***
	BSC7	lenient enforcement of both police and barangay enforcers	0.919	0.071	12.865	***
	BSC6	Neighbors who are unwilling to engage in coordinated efforts in crime prevention	0.993	0.078	12.781	***
Social Disorder (F2)	SD7	Presence of business establishments that become crime hot spots	1.000	—	—	—
	SD6	drunken neighbors who cause disturbance to the neighborhood	0.805	0.049	16.463	***
	SD5	weak security in the neighborhood due to poor physical measures	0.619	0.045	13.858	***
	SD4	disagreement and conflict among neighbors	0.738	0.052	14.294	***
	SD2	existence of juvenile gangs that initiate street crimes and violence	0.883	0.059	15.081	***
Social Deviance (F3)	SDe4	juveniles who engage in delinquent activities	0.904	0.061	14.825	***
	SDe3	businesses that boost crime to proliferate	1.052	0.060	17.433	***
	SDe2	adults who set a negative model for children	0.935	0.063	14.884	***
	SDe1	troublesome children and disrespectful adults	1.000	—	—	—
Social Disintegration (F4)	SDi5	feeling unsafe around transient neighbors due to a lack of familiarity and attachment	1.000	—	—	—
	SDi4	increased resident population, which corresponds to delinquent/crime incidents	0.735	0.051	14.432	***
	SDi6	neighbors who are strangers and cannot be trusted	0.825	0.055	15.013	***
	SDi7	loosened family ties	0.930	0.056	16.595	***

After successive model refinements, sixteen (16) indicators remained in the final measurement model. All retained indicators exhibited standardized factor loadings above the recommended threshold of .50, indicating adequate convergent validity (Hair et al., 2019). Furthermore, all regression paths were statistically significant ($p < .001$), confirming that the indicators represented their respective latent constructs.

The findings confirm that neighborhood crime is multidimensional. The retained constructs collectively represent interconnected social, environmental, and behavioral factors that contribute to crime and insecurity within communities.

The construct Breakdown of Social Control reflects weakened community participation and ineffective informal

social regulation. This finding supports Social Control Theory, which emphasizes that diminished community supervision and weakened social bonds increase the likelihood of criminal behavior (Hirschi, 1969). Recent studies further emphasize that weak collective engagement and poor neighborhood cooperation contribute significantly to community vulnerability to crime (Geron et al., 2023).

Meanwhile, Social Disorder captures visible manifestations of disorder such as gang activity, crime-prone establishments, and weak neighborhood security. The findings strongly support Broken Windows Theory, which posits that visible signs of disorder encourage further criminality and social instability (Wilson & Kelling, 1982). Recent criminological evidence likewise suggests that disorderly environments increase fear of crime and weaken residents' perceptions of safety (McClanahan et al., 2024).

The Social Deviance construct reflects socially unacceptable behaviors and permissive attitudes toward delinquency. The findings support recent literature indicating that deviant role modeling, juvenile delinquency, and normalization of antisocial behaviors contribute to neighborhood criminality (Jamalishahni et al., 2024).

Lastly, Social Disintegration reflects weakened social attachment, distrust among neighbors, and declining community cohesion as the resident population increases. This finding aligns with Collective Efficacy Theory, which argues that communities with low trust and weak shared responsibility are more vulnerable to crime and disorder (Sampson et al., 1997).

Overall, the CFA findings confirmed the factor structure originally identified by España and Nabe (2023) and refined the model into a statistically robust, regionally applicable measurement framework.

➤ *Reliability of the Finalized Neighborhood Crime Constructs*

Reliability analysis was conducted to determine the internal consistency of the finalized neighborhood crime constructs. Reliability refers to the consistency and stability of a measurement instrument across indicators that measure the same construct. Cronbach's alpha coefficient was utilized to assess the reliability of each latent construct and the overall measurement scale, as shown in Table 4.

Table 4 Reliability Analysis of the Finalized Neighborhood Crime Constructs

Construct	Number of Items	Cronbach's Alpha	Interpretation
F1- Breakdown of Social Control	4	.832	High Reliability
F2- Social Disorder	4	.834	High Reliability
F3- Social Deviance	4	.855	Very High Reliability
F4- Social Disintegration	4	.852	Very High Reliability
Overall Scale	16	.918	Excellent Reliability

The results revealed that all latent constructs exceeded the minimum recommended reliability threshold of .70, indicating satisfactory internal consistency (Hair et al., 2019). Among the constructs, Social Deviance had the highest reliability coefficient ($\alpha = .855$), indicating strong consistency among indicators of delinquency tolerance, deviant role modeling, and social permissiveness. Similarly, Social Disintegration demonstrated very high reliability ($\alpha = .852$), indicating stable measurement of weakened social cohesion and neighborhood distrust. The overall measurement scale achieved an excellent reliability coefficient of .918, indicating that the finalized instrument consistently measures neighborhood crime as a multidimensional construct.

The findings are consistent with recent criminological validation studies, which emphasize that reliable neighborhood crime instruments are essential for accurate community safety assessment and policy formulation (Geron et al., 2023). Moreover, the high reliability coefficients suggest that the finalized measurement model has substantial psychometric properties and can be used with confidence in future criminological research in similar community contexts.

➤ *Correlations Among the Latent Constructs of Neighborhood Crime*

The study also examined the correlations among the latent constructs to determine the extent to which the dimensions of neighborhood crime are interrelated, as shown in Table 5. Correlation analysis is important for validating multidimensional constructs because it assesses whether the latent variables are theoretically connected yet conceptually distinct.

The findings revealed that all latent constructs were positively correlated, indicating that the dimensions collectively contribute to neighborhood crime conditions. The strongest relationship was observed between Social Disorder and Social Deviance ($r = .823$), suggesting that visible environmental disorder is strongly associated with deviant social behaviors within communities. This finding supports previous studies indicating that crime-prone environments often normalize delinquency and antisocial behavior (McClanahan et al., 2024).

Table 5 Correlations Among Latent Constructs in the Neighborhood Crime Measurement Model

			Estimate	S.E.	C.R.	P
F1	<-->	F2	0.69	0.073	9.463	***
F1	<-->	F3	0.484	0.059	8.187	***
F1	<-->	F4	0.539	0.072	7.473	***
F2	<-->	F3	0.823	0.078	10.572	***
F2	<-->	F4	0.648	0.082	7.932	***
F3	<-->	F4	0.568	0.073	7.827	***

• Note: F1- Breakdown of Social Control, F2- Social Disorder, F3-Social Deviance, F4- Social Disintegration

Similarly, the strong correlation between Breakdown of Social Control and Social Disorder ($r = .743$) supports Social Disorganization Theory, which argues that weakened social institutions and poor informal control mechanisms increase neighborhood disorder and criminality (Shaw & McKay, 1942).

Meanwhile, moderate correlations among the remaining constructs indicate that while the dimensions are interconnected, each construct still captures distinct aspects of neighborhood crime. This demonstrates acceptable discriminant validity of the measurement model. Recent criminological studies likewise emphasize that neighborhood crime emerges from interconnected social, environmental,

and relational conditions rather than isolated criminal acts (Geron et al., 2023; Jamalishahni et al., 2024).

Overall, the significant interrelationships among the constructs reinforce the multidimensional nature of neighborhood crime in the Davao Region.

➤ Validated Framework of Neighborhood Crime context-specific to the Davao Region

Based on the validated CFA model, a multidimensional framework of neighborhood crime applicable to the Davao Region was developed. The framework retained four empirically validated dimensions: (1) Breakdown of Social Control; (2) Social Disorder; (3) Social Deviance; (4) Social Disintegration. These dimensions collectively explain the neighborhood crime conditions residents experience in the Davao Region.

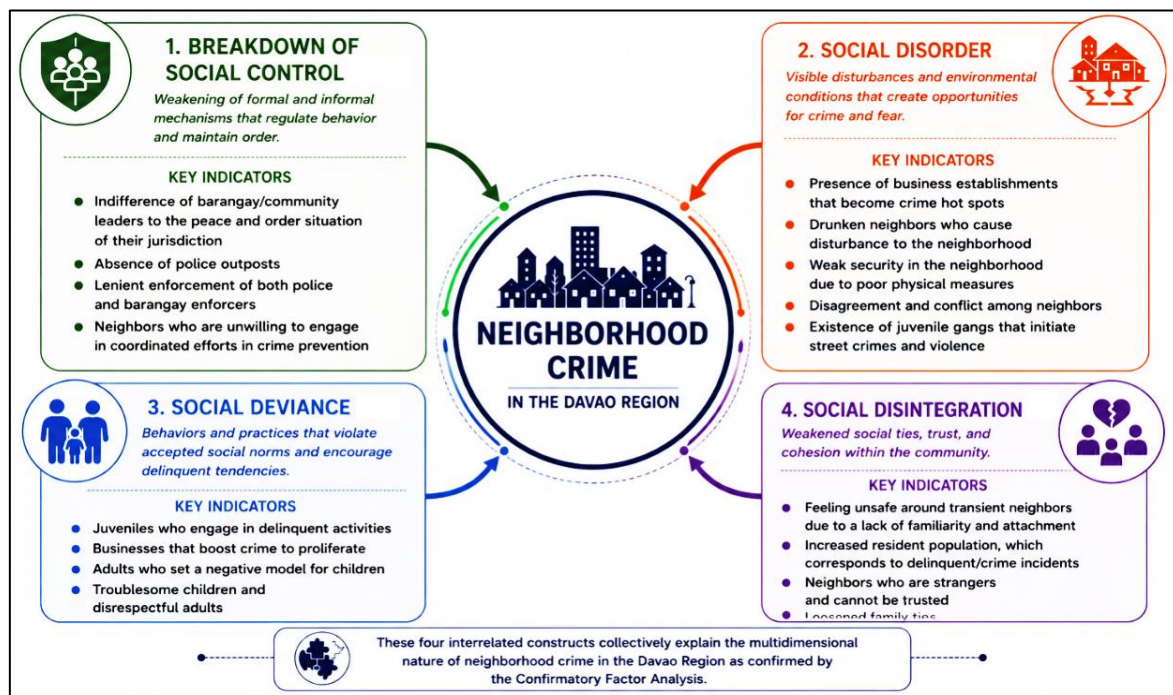


Fig 5 Validated Framework of Neighborhood Crime in the Davao Region

The validated framework demonstrates that neighborhood crime is influenced not only by criminal incidents themselves but also by broader social, environmental, and relational conditions within communities.

Breakdown of Social Control reflects weakened community participation, poor informal regulation, and ineffective neighborhood coordination. Social Disorder represents visible manifestations of instability, such as gangs,

violence, and crime-prone establishments. Social Deviance captures permissive attitudes and behaviors toward delinquency, while Social Disintegration reflects declining neighborhood cohesion and weakened social attachment.

The framework strongly supports Social Disorganization Theory, which holds that weakened social structures increase a community's vulnerability to crime and disorder (Shaw & McKay, 1942). Likewise, Collective

Efficacy Theory emphasizes that trust, social cohesion, and collective willingness to intervene are essential in maintaining neighborhood safety (Sampson et al., 1997).

The findings further align with recent literature emphasizing that community crime prevention should address both structural and social conditions contributing to neighborhood instability (Geron et al., 2023; Jamalishahni et al., 2024).

The validated framework, therefore, provides a context-sensitive, empirically grounded model specifically applicable to the Davao Region. It may serve as a useful guide for policymakers, local government units, law enforcement agencies, and future researchers in developing evidence-based crime-prevention programs and neighborhood-safety interventions.

V. CONCLUSION AND RECOMMENDATIONS

This section presents the conclusions and recommendations derived from the study's findings on the structural validation of neighborhood crime measures in the Davao Region using Confirmatory Factor Analysis (CFA). The conclusions are organized according to the study's specific objectives and summarize the major findings on model fit, factor structure, relationships among latent constructs, reliability, and the development of a validated neighborhood crime framework. The recommendations are likewise based on the conclusions drawn from the study

This study successfully established a psychometrically sound measurement model of neighborhood crime for the Davao Region through Confirmatory Factor Analysis (CFA). Although the initial model demonstrated poor fit, successive refinements involving the removal of weak indicators and the correlation of theoretically related error terms yielded a final model with satisfactory goodness-of-fit indices. These findings confirm that the finalized measurement model possesses adequate structural validity for assessing neighborhood crime within the regional context.

The study further confirmed that neighborhood crime is a multidimensional construct composed of four interrelated yet distinct dimensions: Breakdown of Social Control, Social Disorder, Social Deviance, and Social Disintegration. All retained indicators demonstrated statistically significant factor loadings and acceptable convergent validity, supporting the theoretical framework established by España and Nabe (2023). Given these findings, local government units, law enforcement agencies, and community stakeholders may use the validated four-factor structure to assess neighborhood safety and develop evidence-based crime prevention, community policing, and public safety interventions tailored to the needs of the Davao Region.

The positive and significant relationships among the four latent constructs further demonstrate that neighborhood crime results from interconnected social, environmental, and behavioral conditions rather than isolated criminal incidents. In particular, the strong association between Social Disorder

and Social Deviance highlights the importance of addressing visible disorder and antisocial behaviors simultaneously. These findings suggest that crime prevention initiatives should adopt an integrated, community-based approach that strengthens informal social control, improves neighborhood conditions, and promotes collective efficacy among residents.

The finalized instrument also demonstrated high to excellent internal consistency, confirming its reliability for measuring neighborhood crime across communities in the Davao Region. Consequently, the validated scale may serve as a standardized assessment tool for criminological research, community safety assessments, and program evaluation. Future studies may further strengthen its applicability by conducting measurement invariance testing across demographic groups and geographic settings and by examining the structural relationships among the validated constructs using Structural Equation Modeling (SEM).

Overall, this study provides a validated, context-specific framework for measuring neighborhood crime in the Davao Region. Beyond its contribution to criminological measurement, the framework offers practical guidance for policymakers, local government units, law enforcement agencies, and community organizations in designing data-driven policies and interventions that enhance neighborhood safety, strengthen social cohesion, and support evidence-based decision-making to achieve safer, more resilient communities.

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