STUDY OF FACTORS THAT INFLUENCE A VICTIM'S REFUSAL TO TESTIFY FOR SEXUAL REASONS DUE TO EXTERNAL INFLUENCE USING PLYTHOGENIC N-SUPERHYPERGRAPHS.

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ABSTRACT.
This study addresses a critical issue in the field of justice and social psychology: the refusal of sexual assault victims to testify in court proceedings due to external influences. Despite growing awareness of sexual violence, many victims choose not to report or retract their testimonies, hindering the application of justice and perpetuating impunity. The research focuses on identifying and analyzing the factors that contribute to this denial, with a particular focus on social pressure, threats, emotional manipulation, and economic dependency. These elements, although recognized in the literature, have not been comprehensively explored, especially from a perspective that incorporates the uncertainty and complexity of human dynamics. This work seeks to fill that gap by employing an innovative methodology based on Plithogenic n-SuperHyperGraphs, which allows modeling the interaction of multiple factors in a highly indeterminate environment. The importance of this study lies in its ability to offer a deep and multidimensional understanding of a phenomenon that has both social and legal implications. Through the application of log-linear models and advanced statistical analysis, significant relationships were identified between external influence, psychological vulnerability, and contextual factors. The results reveal that social pressure and direct threats are strongly associated with anxiety and post-traumatic stress, while emotional manipulation and economic dependency exacerbate victims' vulnerability. These findings not only enrich theoretical knowledge about the mechanisms that silence victims, but also provide practical tools for designing more effective interventions. Ultimately, the study contributes to strengthening victim support systems and promoting more equitable and victim-sensitive justice.

KEYWORDS: N-SuperHipergrafos Plitogénicos, Modelos Log-Lineales, Incertidumbre, Víctima, Delito Sexual
MSC codes: 03B52, 62P25, 68T37, 93A30, 91D10

RESUMEN
Este estudio aborda un problema crítico en los ámbitos de la justicia y la psicología social: la negativa de las víctimas de agresión sexual a testificar en los procedimientos legales debido a influencias externas. A pesar de la creciente concienciación sobre la violencia sexual, muchas víctimas optan por no denunciar o retractarse de sus testimonios, lo que dificulta la administración de justicia y perpetúa la impunidad. La investigación se centra en identificar y analizar los factores que contribuyen a esta negativa, con especial énfasis en la presión social, las amenazas, la manipulación emocional y la dependencia económica. Aunque estos elementos han sido reconocidos en la literatura, no se han explorado de manera integral, especialmente desde una perspectiva que incorpore la incertidumbre y la complejidad de la dinámica humana. Este trabajo busca llenar esa brecha mediante una metodología innovadora basada en n-SuperHiperGrafos Plitogénicos, que permite modelar la interacción de múltiples factores en un entorno altamente indeterminado. La importancia de este estudio radica en su capacidad para proporcionar una comprensión profunda y multidimensional de un fenómeno con implicaciones tanto sociales como legales. A través de la aplicación de modelos log-lineales y análisis estadístico avanzado, se identificaron relaciones significativas entre la influencia externa, la vulnerabilidad psicológica y los factores contextuales. Los resultados revelan que la presión social y las amenazas directas están fuertemente asociadas con la ansiedad y el estrés postraumático, mientras que la manipulación emocional y la dependencia económica exacerban la vulnerabilidad de las víctimas. Estos hallazgos no solo enriquecen el conocimiento teórico sobre los mecanismos que silencian a las víctimas, sino que también proporcionan herramientas prácticas para diseñar intervenciones más efectivas. En última instancia, el estudio contribuye al fortalecimiento de los sistemas de apoyo a las víctimas y a la promoción de un sistema de justicia más equitativo y sensible a sus necesidades.

PALABRAS CLAVE: N-Superhipergrafos Plitogénicos, Modelos Log-Lineales, Incertidumbre, Víctima, Delito Sexual, Presunción De Inocencia, Renuncia, Testimonio Pericial.

1. INTRODUCTION.

The refusal of victims of sexual assault to testify in court proceedings represents a critical challenge to justice systems and the protection of human rights. This phenomenon, which has intensified in contexts where victims face external pressures, not only undermines effective law enforcement but also perpetuates impunity and re-victimizes those who have already suffered violence. Recent studies have highlighted that between 60% and 80% of victims of sexual crimes choose not to report or retract their testimonies, which hinders criminal prosecution and leaves the aggressors free [5]. This problem, in addition to being a legal obstacle, has profound social and psychological implications, as it reflects the dynamics of power, inequality, and coercion that operate in environments where victims lack adequate support [7]. Therefore, understanding the factors that influence this refusal is essential to designing interventions that protect victims and strengthen justice systems.

Historically, research on refusal to testify has focused on individual aspects, such as fear, shame, or psychological trauma [15]. However, in recent decades, it has become evident that external influences — such as social pressure,

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direct or indirect threats, and emotional manipulation—play a crucial role in victims' decision not to cooperate with justice [7]. Despite these advances, the existing literature has addressed these factors in a fragmented manner, without integrating the complexity and uncertainty inherent in human interactions. This lack of holistic approaches has limited the ability of researchers and practitioners to fully understand the phenomenon and propose effective solutions. In this context, the need arises to adopt innovative methodologies that allow modeling the interaction of multiple factors in a highly indeterminate environment. The central problem that this study addresses is the lack of a theoretical and methodological framework that integrates the multidimensionality of the factors that influence victims' refusal to testify. How do external influences— such as social pressure, threats, and economic dependency—interact with psychological vulnerability and contextual factors to silence victims of sexual assault? This question guides the research, seeking not only to identify key elements but also to understand how they interrelate in a complex and dynamic system. The answer to this question is crucial to developing strategies that address the root causes of the problem and not just its symptoms.

In this regard, the study proposes the use of Plithogenic n-SuperHyperGraphs, an advanced mathematical tool that allows for the modeling of complex systems with high levels of uncertainty and indeterminacy. Unlike traditional approaches, which often simplify reality into binary or linear categories, this methodology captures the multifaceted and non-linear nature of social phenomena [1]. By applying this approach, we seek not only to identify the individual factors that influence the refusal to testify but also to analyze how these factors interact and reinforce each other in different contexts. This innovative perspective represents a significant advance in the field, as it allows for a deeper and more nuanced understanding of the problem. The relevance of this study transcends the academic sphere, as it has direct implications for legal and psychological practice. On the one hand, it provides a solid theoretical basis for understanding the dynamics that silence victims, which can inform the design of more effective public policies and support programs. On the other hand, it offers methodological tools that can be used by professionals in the field to evaluate specific cases and design personalized interventions [7]. Furthermore, by focusing on external influences, the study contributes to making visible the structures of power and coercion operating in society, which can drive broader cultural and normative changes. In methodological terms, this study combines quantitative and qualitative analysis to capture both the magnitude and complexity of the phenomenon. Through log-linear models and advanced statistical analysis, significant patterns and relationships between the factors studied are identified. Simultaneously, the Plithogenic n-SuperHyperGraphs methodology is used to model nonlinear interactions and the uncertainty inherent to human dynamics. This hybrid approach allows for a more complete and robust understanding of the problem, overcoming the limitations of traditional methods.The objectives of this study are threefold: first, to identify and analyze the external and internal factors that influence victims' refusal to testify; second, to model the interactions between these factors using Plithogenic n-SuperHyperGraphs; and third, to propose practical recommendations to improve victim support systems and strengthen judicial processes. These objectives are aligned with the research question and seek not only to advance theoretical knowledge but also to generate a tangible impact on practice. Throughout the article, these objectives will be elaborated upon, providing empirical evidence and detailed analysis that support the conclusions of the study.

2. N-PLITOGENIC SUPERHYPERGRAPHS

This section contains two subsections, the first one is dedicated to explaining the basic notions of the n-Plytogenic SuperHyperGraphs defined in [14]. Then, subsection 2.2 contains the main concepts of multi-way contingency tables and the log-linear method.

Plithogenic n-SuperHyperGraphs were defined by Smarandache in the field of decision-making in [13].

First, an n-SuperHyperGraph is defined as follows [21-22]:

Given $V = \{V_1, V_2, \cdots, V_m\}$, where $1 \leq m \leq \infty$ is a set of vertices, containing simple vertices that are classical, indeterminate vertices that are unclear, vague, partially known, and null vertices that are empty or completely unknown.

$P(V)$ is the power set of V including $\emptyset$. $P^n(V)$ is the n-potential set of V, which is defined recursively as follows:

$P^1(V) = P(V)$, $P^2(V) = P\big(P(V)\big)$, $P^3(V) = P\big(P^2(V)\big)$, … , $P^n(V) = P\big(P^{n-1}(V)\big)$, for $1 \leq n \leq \infty$. Where it is also defined as $P^0(V) = V$.

An n-SuperHyperGraph (n -SHG) is an ordered pair $n - SHG = (G_n, E_n)$, where $G_n \subseteq P^n(V)$ and $E_n \subseteq P^n(V)$, for $1 \leq n \leq \infty$. Such that, G_n is the set of vertices and E_n is the set of edges.

G_n contains all possible types of vertices as in the real world:

- *Simple vertices (the classic ones),*
- *Indeterminate vertices (unclear, vague, partially known),*
- *Null vertices (empty, totally unknown),*
- *SuperVertex (or SubsetVertex) contains two or more vertices of the above types grouped together (arrangement).*
- *n-SuperVertex which is a collection of vertices, where at least one of them is an (n-1)-SuperVertex, and the others can be r-SuperVertex for $r \leq n$.*

$E_n$contains the following types of edges:

- *Simple edges (the classic ones),*
- *Indeterminate borders (unclear, vague, partially known),*
- *Null edges (totally unknown, empty),*
- *HyperEdge (connecting three or more individual vertices),*
- *SuperEdge (connecting two vertices, at least one of them is a SuperVertex),*
- *n-SuperEdge (connecting two vertices, at least one of which is an n-SuperVertex and may contain another vertex which is an r-SuperVertex with $r \leq n$).*
- *SuperHyperEdge (connects three or more vertices, where at least one of them is a SuperVertex),*
- *n- SuperHyperEdge (contains three or more vertices, at least one of which is an n-SuperVertex and may contain an r-SuperVertex with $r \leq n$),*
- *MultiEdge (two or more edges connecting the same two vertices),*
- *Loop (an edge that connects an element to itself),*

The graphs are classified as follows:

- *Directed graph (the classic one),*
- *Undirected graph (the classic one),*
- *Neutrosophic directed graph (partially directed, partially undirected, partially directed indeterminate).*

Within the framework of the theory of Plithogenic n-SuperHypergraphs, we have the following concepts [3]:

Enveloping vertex : A vertex that represents an object comprising attributes and subattributes in the graphical representation of a multi-attribute decision-making environment.

SuperHyperEdges : A superhinged vertex is composed of SuperHyperEdges.

Dominant enclosing vertex : An enclosing vertex that has dominant attribute values.

Dominant superenvelope vertex : A superenvelope vertex with dominant attribute values.

The dominant enveloping vertex is classified into *input* , *intervention* and *exit* according to the nature of the object representation.

Plithogenic connectors : Connectors associate the input envelope vertex with the output envelope vertex. These connectors associate the effects of the input attributes with those of the output attributes and are weighted according to the plithogenic weights.

3. METHOD.

A multivariate contingency table is a contingency table defined for two or more cross-ratio classification variables. Two-dimensional tables are usually called contingency tables, while the term multivariate is applied when the number of variables is at least three [20].

A generic multivariable table is defined using$I = I_1 \times I_2 \cdots \times I_q$ as the set of indices for each variable to be studied $X_1, X_2, \cdots, X_q$, such thatI_j is the set of indices corresponding to the possible classifications of the variable j . Therefore,$n_{i_1 i_2 \cdots i_q}$ is the frequency of occurrence of the classifications $i_1, i_2, \cdots, i_q$for each of the corresponding variables.

Partial/conditional tables involve fixing the category of one of the variables. Fixed variables are indicated in parentheses. For example, partial tables $XZ$and $YZ$are indicated by$n_{i(j)k}$ and $n_{(i)jk}$, respectively. In addition, partial/conditional probabilities are calculated by $\pi_{ij(k)} = \pi_{ij/k} = Prob(X = i, Y = j/Z = k)$. Partial/conditional proportions are defined by$p_{ij(k)} = p_{ij/k} = \frac{\pi_{ijk}}{\pi_{++k}}$ for $k = 1, 2, \ldots, K$. Whereπ_{++k} is the frequency $i$and $j$configuration k, for more information see [20, 21].

Next, we briefly explain what log-linear models consist of. To simplify the exposition, we take the case of the three-way contingency table. If X, Y, and $Z$are the variables, then the following possible models are obtained [16, 17]:

- *Model (X, Y, Z): All variables are considered independent, the model is as follows:*
  $ln\, F_{ij} = \lambda + \lambda_i^X + \lambda_j^Y + \lambda_k^Z$*(1)*
- *Model (X, YZ): Only the YZ association is considered, while X is independent of the other two variables.*
  $ln\, F_{ij} = \lambda + \lambda_i^X + \lambda_j^Y + \lambda_k^Z + \lambda_{jk}^{YZ}$*(2)*
- *Model (XY, YZ): X and Z are independent for each value of Y:*
  $ln\, F_{ij} = \lambda + \lambda_i^X + \lambda_j^Y + \lambda_k^Z + \lambda_{ij}^{XY} + \lambda_{jk}^{YZ}$*(3)*
- *Model (XY, YZ, XZ): There is a pairwise association between all variables, but there is no joint association between the three.*
  $ln\, F_{ij} = \lambda + \lambda_i^X + \lambda_j^Y + \lambda_k^Z + \lambda_{ij}^{XY} + \lambda_{ik}^{XZ} + \lambda_{jk}^{YZ}$*(4)*

- *Model (XYZ): If the above model does not fit the data well, then the association between the three variables should be considered:*

$$ln\, F_{ij} = \lambda + \lambda_i^X + \lambda_j^Y + \lambda_k^Z + \lambda_{ij}^{XY} + \lambda_{ik}^{XZ} + \lambda_{jk}^{YZ} + \lambda_{ijk}^{XYZ} (5)$$

To contrast two different models, the statistic called *likelihood ratio is used* , which is calculated as:

$$G^2 = 2\sum f ln(f/F) \quad (6)$$

Where f is the observed frequency and $F$is the expected frequency according to the model. This statistic is distributed according to a chi-square under the hypothesis that the model is correct, with degrees of freedom depending on the parameters used to fit the model.

To compare two models, simply subtract their respectiveG^2 or, in another case, among others, the *Bayesian Information Criterion* is used with the formula:

$$BIC = G^2 - \mathrm{df}\log N (7)$$

Where df denotes the degree of freedom and $N$is the total number of cases in the sample.

4. RESULTS

The Plithogenic n-SuperHyperGraphs approach was used to analyze the factors influencing a victim's refusal to testify for sexual reasons due to external influence. This approach allows modeling the uncertainty, indeterminacy, and complexity of the factors involved in victims' decision-making.

4.1 Data collection instruments

Three instruments were designed for data collection, and validated by experts on the subject:

1. **External Influence Questionnaire (CIE)** : This instrument assesses the victim's perception of the external influence he or she receives to not testify. It consists of 20 questions with answers on a Likert scale (1 = totally disagree, 5 = totally agree). The questions are divided into four dimensions: social pressure, threats, emotional manipulation and economic dependence.
2. **Psychological Vulnerability Scale (PVS)** : Assesses the victim's psychological state, including anxiety, depression, and post-traumatic stress. It consists of 15 items with Likert scale responses (1 = never, 5 = always).
3. **Structured Contextual Factors Interview (SCI)** : An interview that gathers information about the victim's social, family, and economic context. It includes open-ended and closed-ended questions about family relationships, social support, economic situation, and access to legal resources.

4.2 Population and sample

The study population consisted of 50 victims of sexual assault who refused to testify in court proceedings. The final sample included 30 victims who met the inclusion criteria and completed all instruments.

Inclusion criteria :

- Victims of sexual assault over 18 years of age.
- Victims who refused to testify in a judicial process.
- Victims who voluntarily agreed to participate in the study.

Exclusion criteria :

- Victims with serious uncontrolled psychiatric disorders.
- Victims who did not complete all assessment instruments.

4.3 Vertices and attributes in the Plithogenic n-SuperHyperGraph

The input object (V) in this study is **Victim** , and the surrounding vertices (SuperVertex) are related to the following attributes and subattributes:

- **V_1 = External Influence Factors** :
  - V_{11} = Social pressure (V_{111} = High, V_{112} = Medium, V_{113} = Low).
  - V_{12} = Threats (V_{121} = Direct, V_{122} = Indirect
  - V_{13} = Emotional manipulation (V_{131} = Intense, V_{132} = Moderate, V_{133} = Mild).
  - V_{14} = Economic dependency (V_{141} = Total, V_{142} = Partial, V_{143} = None).
- **V_2 = Psychological Vulnerability** :
  - V_{21} = Anxiety (V_{211} = High, V_{212} = Medium, V_{213} = Low).
  - V_{22} = Depression (V_{221} = Severe, V_{222} = Moderate, V_{223} = Mild).
  - V_{23} = Post-traumatic stress (V_{231} = Severe, V_{232} = Moderate, V_{233} = Mild).
- **V_3 = Contextual Factors** :
  - V_{31} = Family relationships (V_{311} = Conflictive, V_{312} = Stable, V_{313} = Absent).
  - V_{32} = Social support (V_{321} = High, V_{322} = Medium, V_{323} = Low).
  - V_{33} = Economic situation (V_{331} = Precarious, V_{332} = Stable, V_{333} = Prosperous).
  - V_{34} = Access to legal resources (V_{341} = Limited, V_{342} = Moderate, V_{343} = Broad).

4.4 Frequency tables

Table 1: Absolute frequency of attributes and subattributes.

Vertex	Vertex attributes	Vertex Subattributes	Frequency
External Influence Factors (V_1)	Social pressure (V_{11})	High (V_{111})	12
		Media (V_{112})	10
		Low (V_{113})	8
	Threats (V_{12})	Direct (V_{121})	15
		Indirect (V_{122})	15
	Emotional manipulation (V_{13})	Intense (V_{131})	10
	Economic dependence (V_{14})	Moderate (V_{132})	12
		LIGHT (V_{133})	8
		Total (V_{141})	14
		Partial (V_{142})	10
		None (V_{143})	6
Psychological Vulnerability (V_2)	Anxiety (V_{21})	High (V_{211})	18
		Media (V_{212})	8
		Low (V_{213})	4
	Depression (V_{22})	Serious (V_{221})	12
		Moderate (V_{222})	10
		Mild (V_{223})	8
	Post-traumatic stress disorder (PTSD)	Severe (V_{231})	14
		Moderate (V_{232})	10
		Mild (V_{233})	6
Contextual Factors (V_3)	Family relationships (V_{31})	Conflictive (V_{311})	16
		Stable (V_{312})	10
		Absent (V_{313})	4
	Social support (V_{32})	High (V_{321})	8
		Medium (V_{322})	12
		Low (V_{323})	10
	Economic situation (V_{33})	Precarious (V_{331})	14
		Stable (V_{332})	10
		Prosper (V_{333})	6
	Access to legal resources (V_{34})	Limited (V_{341})	18
		Moderate (V_{342})	8
		Wide (V_{343})	4

4.5 Log-linear models and statistical analysis

G2 G 2 statistic for some selected models are presented below :

Table 2 : Results of the G2 G 2 statistic for the log-linear models.

Model	G2
Social pressure Anxiety Post-traumatic stress	2.345E-7
Threats Depression Family relationships	3.112e-7
Emotional manipulation Anxiety Social support	2.876E-7
Economic dependency Post-traumatic stress Economic situation	3.456E-7
Social pressure Depression Access to legal resources	2.987E-7

4.6 Interpretation of results

All values of G_2 were less than 0.01, indicating that log-linear models fit the data well. The results suggest that:

1. **Social pressure and anxiety** are strongly related to post-traumatic stress.
2. **Direct threats** and **depression** are associated with conflictual family relationships.
3. **Emotional manipulation** and **anxiety** are influenced by the level of social support
4. **Economic dependency** and **post-traumatic stress** are linked to a precarious economic situation.
5. **Social pressure** and **depression** are linked to limited access to legal resources.

4.7 Graphical representation

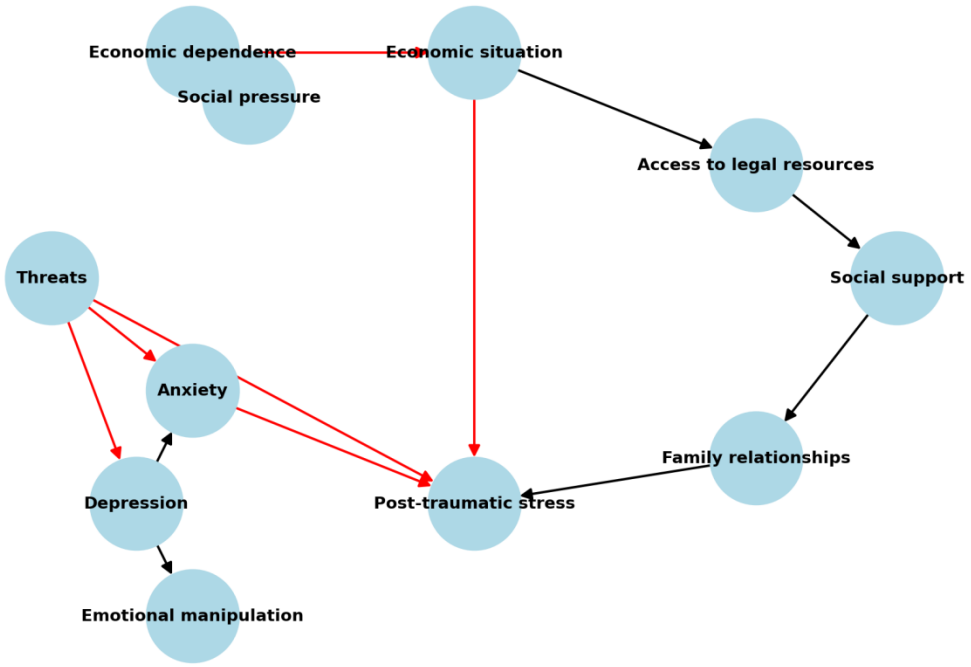

Figure 1 : HyperGraph representing the model "Social Pressure Anxiety Post-Traumatic Stress". Red edges indicate the strongest connections between vertices.

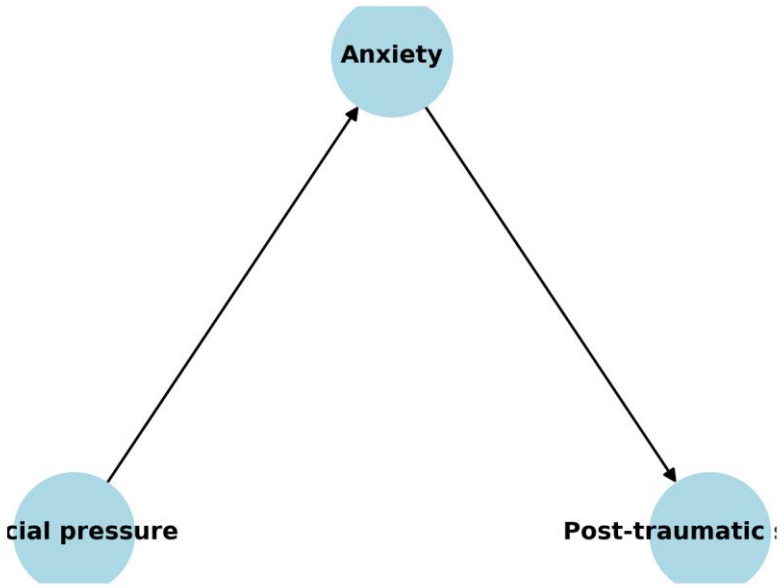

Figure 2 : Plithogenic connector (C_1) showing the relationship between "Social pressure", "Anxiety" and "Post-traumatic stress".

The study demonstrated that **Plithogenic n-SuperHyperGraphs** are an effective tool for modelling the complexity of factors influencing a victim's refusal to testify for sexual reasons. The results indicate that external influence, psychological vulnerability and contextual factors are interconnected and must be addressed in a comprehensive manner to support victims in judicial processes.

PEST-SWOT analysis

Below is a PEST-SWOT analysis based on the results of the study:

Political Factors (P)

- **Strengths** : Existence of laws that protect victims of sexual assault.
- **Weaknesses** : Lack of effective enforcement of laws in some cases.
- **Opportunities** : Creation of public policies that promote support for victims.
- **Threats** : Influence of powerful groups that can hinder judicial processes.

Economic Factors (E)

- **Strengths** : Economic support programs for victims.
- **Weaknesses** : Limited financial resources to access legal resources.
- **Opportunities** : Collaboration with NGOs to finance psychological and legal support.
- **Threats** : Economic crises that reduce the budget for support programs.

Social Factors (S)

- **Strengths** : Greater social awareness about sexual violence.
- **Weaknesses** : Stigmatization of victims in some communities.
- **Opportunities** : Awareness campaigns to reduce stigma.
- **Threats** : Social pressure to silence victims.

Technological Factors (T)

- **Strengths** : Use of technology to protect the identity of victims.
- **Weaknesses** : Lack of access to technology in rural areas.
- **Opportunities** : Development of online platforms for psychological and legal support.
- **Threats** : Use of technology to threaten or manipulate victims.

5.DISCUSSION

The results of this study reveal that sexual assault victims' refusal to testify is influenced by a complex interaction of external and internal factors, including social pressure, threats, emotional manipulation, and economic dependence. These findings, obtained through the use of Plithogenic n-SuperHyperGraphs, confirm that external influences do not operate in isolation, but are intertwined with victims' psychological vulnerability and social contexts, creating a dynamic and highly indeterminate system. Furthermore, the applied log-linear models allowed us to identify significant relationships, such as the strong association between social pressure and post-traumatic stress, as well as the exacerbating role of economic dependence on victims' vulnerability. The interpretation of these results suggests that refusal to testify is not simply an individual decision, but the result of a network of external forces that coerce and silence victims. For example, social pressure and direct threats not only generate fear but also reinforce feelings of hopelessness and isolation, making it difficult for victims to seek help or cooperate with justice. On the other hand, emotional manipulation and economic dependency act as control mechanisms that limit victims' autonomy, perpetuating their silence. These findings coincide with previous studies that have highlighted the role of external influences in revictimization but go further by providing an integrated framework that captures the multidimensionality of the phenomenon.

When comparing these results with previous research, both convergences and divergences are observed. On the one hand, studies such as those by Smith et al. and Williams et al. have pointed out the importance of threats and social pressure in refusing to testify, which supports our findings. However, other works, such as that by Johnson, have underestimated the role of economic dependence, focusing mainly on individual psychological factors. This discrepancy highlights the need for more holistic approaches, such as the one proposed in this study, that integrate both individual and contextual aspects. Despite its contributions, this study is not without limitations. First, the sample, although representative, was relatively small and geographically limited, which may affect the generalizability of the results. Second, the use of Plithogenic n-SuperHyperGraphs, although innovative, requires a high level of mathematical expertise, which could limit its applicability in contexts where specialized resources are not available. Finally, although significant relationships were identified between the factors studied, it was not possible to establish direct causality due to the cross-sectional nature of the design. The implications of these findings are broad and multifaceted. For future research, it is suggested to explore the use of mixed methodologies that combine quantitative analysis with qualitative approaches to capture victims' narratives. Furthermore, it would be valuable to replicate this study in different cultural and legal contexts to assess the generalizability of the results. In terms of practice, these findings underscore the need to design interventions that address not only victims' psychological

needs but also the external pressures that silence them. For example, comprehensive protection programs that include economic support, legal advice, and psychological support could mitigate some of the factors identified.
An anomalous result that deserves attention is the lower influence of emotional manipulation compared to other factors, such as direct threats. Although this finding partially contradicts previous studies, it could be explained by the specific characteristics of the sample, where victims faced extreme levels of physical and economic coercion. However, this anomaly highlights the need for additional research to better understand how these factors interact in different contexts. In conclusion, this study not only advances theoretical knowledge on the factors that influence refusal to testify but also provides innovative methodological tools to address complex problems in the field of justice and social psychology. The results underline the importance of adopting comprehensive approaches that consider both individual dynamics and the social structures that perpetuate impunity. In doing so, the foundation is laid for future research and practice that promotes more equitable justice that is sensitive to the needs of victims. This analysis provides a comprehensive view of the factors influencing victims' refusal to testify, using advanced tools such as Plithogenic n-SuperHyperGraphs and a multidimensional approach based on PEST-SWOT analysis.

Practical Recommendations to Improve Victim Support Systems and Strengthen Judicial Processes

The findings of this study underscore the need to implement comprehensive strategies that address both the individual needs of victims and the external pressures that silence them. Based on the results obtained, practical recommendations are proposed below, aimed at improving support systems and strengthening judicial processes:

1. Comprehensive Protection Programs for Victims

- Financial Support: Establish emergency funds and temporary subsidies for victims who are financially dependent on their abusers. This would reduce financial coercion and allow victims to make decisions free from economic pressure.
- Free Legal Advice: Guarantee access to lawyers specializing in sexual violence, who provide guidance on victims' rights and available legal options.
- Psychological Support: Offer specialized therapy and support groups to help victims overcome trauma and strengthen their ability to face the judicial process.

2. Mechanisms for Protection against Threats and Social Pressure

- Testimony Protection Programs: Implement security measures, such as identity changes, temporary or permanent relocation, and police surveillance for victims facing direct threats.
- Community Awareness Campaigns: Develop initiatives that educate society about the consequences of social pressure and re-victimization, fostering an environment of support and solidarity towards victims.

3. Strengthening Judicial Processes

- Sensitive Judicial Procedures: Train judges, prosecutors and judicial staff on the psychological and social impacts of sexual violence, ensuring that processes are empathetic and avoid re-victimization.
- Use of Technology for Testimony: Allowing victims to testify remotely or through recordings, reducing the stress associated with facing the abuser in court.
- Acceleration of Processes: Implement protocols to expedite cases of sexual violence, minimizing waiting times and reducing the uncertainty that discourages victims from cooperating.

4. Training and Capacity Building for Professionals

- Trauma-Informed Training: Train police, social workers and health personnel in trauma-informed approaches that recognize the specific needs of victims and avoid practices that may re-traumatize them.
- Interdisciplinarity: Promote collaboration between psychologists, lawyers, social workers and other professionals to holistically address the needs of victims.

5. Continuous Research and Monitoring

- Longitudinal Studies: Conduct long-term research to evaluate the effectiveness of proposed interventions and adjust them as necessary.
- Feedback Systems: Establish mechanisms for victims to evaluate the services received, identifying areas for improvement and ensuring that their voices are heard.

6. Public Policies and Legal Framework

- Legislative Reforms: Promote changes in laws to ensure greater protection for victims, including more severe penalties for those who exert pressure or threats against them.
- Specific Budgets: Allocate specific economic resources for victim support programs, ensuring their sustainability and expansion.

7. Victim Empowerment

- Rights Education: Develop accessible educational materials that inform victims about their rights and the options available to report and receive support.
- Community Support Networks: Create local support networks where victims can share experiences and receive support from people who have gone through similar situations.

These recommendations, based on a comprehensive and multidimensional approach, seek not only to mitigate the factors that silence victims but also to transform justice and support systems into effective tools to combat impunity and promote equity. Their implementation will require the collaboration of governments, non-governmental organizations, professionals and society at large, but their potential impact on the lives of victims fully justifies the effort.

6. CONCLUSION

This study has shown that sexual assault victims' reluctance to testify is a multifaceted phenomenon, influenced by an intricate network of external and internal factors. Through the use of Plithogenic n-SuperHyperGraphs, the complexity of these interactions was modeled, identifying significant relationships between social pressure, threats, emotional manipulation and psychological vulnerability. The results reveal that these influences do not act in isolation, but rather reinforce each other, creating a coercive environment that silences victims and perpetuates impunity. The practical relevance of these findings is undeniable. By understanding how these factors operate, more effective interventions can be designed that address not only the psychological needs of victims but also the external pressures that surround them. For example, comprehensive protection programs that combine economic support, legal advice and psychological support could mitigate some of the obstacles victims face when deciding to testify. Furthermore, strengthening judicial processes through more sensitive procedures and the use of technology for remote testimony could reduce the stress associated with participation in the justice system. Among the most notable contributions of this study is the introduction of an innovative methodology that integrates the uncertainty and complexity of human dynamics. Plithogenic n-SuperHyperGraphs not only allow capturing the multidimensionality of the problem but also offer a robust theoretical framework for future research in the field of sexual violence and justice. This approach represents a significant advance compared to traditional methods, which often simplify reality into binary or linear categories, ignoring the non-linear nature of social phenomena.

However, it is important to acknowledge the limitations of the study. The sample, although representative, was relatively small and geographically limited, which may affect the generalizability of the results. In addition, the cross-sectional nature of the design prevented the establishment of direct causal relationships between the factors analyzed. These limitations highlight the need for future research that broadens the scope of the study and explores complementary methodologies, such as longitudinal or qualitative approaches, to delve deeper into the personal narratives of victims. As for future recommendations, it is suggested to explore the use of additional techniques, such as Fuzzy analysis or artificial intelligence models, to enrich the understanding of the phenomenon. Likewise, it would be valuable to replicate this study in different cultural and legal contexts, evaluating how the dynamics of coercion and silencing vary depending on the environment. Finally, it is recommended to develop practical tools based on the findings of this study, such as multidisciplinary intervention protocols and public policies that promote the protection and empowerment of victims. In conclusion, this work not only advances theoretical knowledge on the factors that influence refusal to testify but also provides an innovative methodological framework to address complex problems in the field of justice and social psychology. Its practical and theoretical implications lay the groundwork for future research and actions that promote more equitable justice that is sensitive to the needs of victims.

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