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Forensic Deception Detection Using Layered Voice Analysis: A Case Study on the Sharon Raj Murder Investigation

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Abstract

This study analyzed deception and stress markers in the Sharon Raj murder case using layered voice analysis (LVA) 6.50. The research examined publicly available phone recordings of the accused, XYZ, to identify emotional instability, cognitive suppression, and inconsistencies in her statements. Key findings revealed high stress and deception markers when discussing the poison, medicine, and relationship details. Multiple segments showed medium to high risk, indicating possible withheld information or manipulative responses. The study highlights the importance of forensic voice analysis in criminal investigations by how LVA can assist in detecting deception. However, findings should be corroborated with physical evidence and behavioral analysis for legal accuracy.

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Introduction with Brief Literature Review

Maybe love is the most beautiful emotional cocktail in this world. Loving someone unconditionally and harmlessly is a high-dimensional socio-emotional development to be attained by all human beings. Amidst the digital invasions, media consumption, and information overload, are we forgetting about true love, or have other evil emotions carried away the spirit of love? However, it has been a topic of discussion among citizens regardless of their generational tags—what happened to love, the emotion? Why do people kill their love partners? According to the Triarchic theory of love, love is a mixture of intimacy, passion, and commitment (Sternberg, 1986). Suppose these three combinations exist in a couple—it is called consummate love. The absence or presence of two elements or one element forms different types of love or lovelessness (Sternberg, 1988). Perhaps, in the new era of love, these three elements alone are not enough to sustain a healthy love life since toxicity or freedom-

lessness is often infused by either partner. Probably, there should be a fourth element called democracy in love—understanding and accepting the partner. When did lovers begin to kill their so-called better halves? The answer is unknown to all. Some people argue that it is a generational issue, claiming their generation was much kinder than the current one. However, these comments are vague.

The phenomenon of boyfriends or lovers killing their girlfriends out of rejection or infidelity is a common crime in Indian culture, where females are often discouraged from expressing their disagreements or rights as human beings. Love-hate crimes are defined as attacks or killings of women, specifically ex-girlfriends, for refusing a marriage proposal, ending a relationship, or rejecting a love proposal (Savithri & Joseph, 2022). According to the latest data from the National Crime Records Bureau (NCRB), 4,45,256 cases of crimes against women were reported in 2022. Among these, cruelty by husbands or their relatives accounted for 31.4%, kidnapping and abduction of women 19.2%, assault on women with intent to outrage modesty 18.7%, and rape 7.1%. Approximately 51 FIRs are reported every hour, with the lion's share of crimes being committed by the victim's own loved ones. Keeping these statistics aside, there has been a recent trend where women have begun to kill or harm their male partners. There are a few reported cases from India, one of which is the tragic death of 23-year-old Sharon Raj from Kerala. Later, investigations revealed that Sharon Raj was murdered by his girlfriend, XYZ. The victim did not allow the girlfriend to break off their relationship, even though XYZ had a good marriage alliance arranged by her family. Her family members also urged Sharon to end the relationship, but he continued to love her. XYZ killed her lover by giving him an herbal-laced poisonous concoction. The defense claimed that Sharon Raj possessed private videos of the offender and used them for blackmail. However, there was no evidence to support this claim. She meticulously planned and executed the murder, initially evading the investigation team. Sharon Raj's brother suspected XYZ and questioned her about the herbal concoction. He recorded their phone conversations and voice chats, which were later publicly released. The victim was hospitalized for several days and suffered immense pain before his death (Express News Service, 2025a).

This incident is viewed as a love-hate crime, but some also consider it an honor killing, similar to the Kevin Joseph murder case, due to the caste backgrounds of both the perpetrator and the victim. While people interpret the case from different perspectives, it is indisputable that XYZ exhibited manipulation in her actions. First, she targeted Sharon's fragile male ego by suggesting that he could not handle the bitter taste of Ayurvedic medicine, known as kashayam, which she was consuming for an illness. Second, she devised deceptive challenges, one of which involved mixing paracetamol into mango juice, which the victim refused to drink due to its unpalatable taste. Finally, in her last step, she invited Sharon to her home, enticing him with the promise of physical intimacy. Unfortunately, he drank the entire herbal poisonous concoction. Through these strategies, the offender demonstrated subtle yet undiagnosed psychopathic interpersonal traits. Call records and WhatsApp voice messages of the offender were leaked to the public through social media (Indian Express, 2025). However, the use of layered voice analysis (LVA) in the investigation was not mentioned. For instance, the Central Bureau of Investigation (CBI) conducted an LVA test on Sanjay Roy, the prime accused in the rape and murder of a trainee doctor at Kolkata's RG Kar Medical College, due to inconsistencies in his statements. Layered voice analysis is a forensic psychology tool that detects deception by analyzing vocal stress. The technology employs a mathematical process to detect anomalies in speech flow, classifying them into various emotional categories (Nemesysco, n.d.). Unlike traditional voice stress analysis methods that focus on micro-tremors, LVA utilizes a broader spectrum of vocal properties to assess the speaker's mental state. The application of LVA in murder cases has been documented in various instances.(Harnsberger et al., 2009; Horvath et al., 2013). In Pakistan, a suspect arrested for the murder of a young woman underwent a computer voice stress analyzer (CVSA) examination, a technology similar to LVA. The results indicated deception, leading to a confession not only for that murder but also for over 100 others.

Rationale of the Study

The murder of Sharon Raj by his girlfriend XYZ was sensational news from Kerala. The rise in love-hate crimes in the state emphasizes the importance of applying more sophisticated forensic psychological tools to identify the deception. As a screening test, layered voice analysis provides a deeper psychological viewpoint on offender profiling during interrogation. LVA detects speech indicators of deception, emotional instability, and cognitive suppression. LVA results corroborated with other evidence. This study investigates how LVA could enhance crime investigations by examining XYZ's recorded calls, especially in love-hate crimes.

Objectives of the Study

- To examine deception markers in XYZ's speech using Layered Voice Analysis (LVA) and identify stress, cognitive suppression, and emotional instability in her verbal interactions.
- To evaluate the effectiveness and forensic applicability of LVA in detecting deception in real-life criminal investigations, particularly in love-hate crime cases.
- To analyze the psychological and behavioral patterns exhibited in XYZ's recorded conversations, focusing on manipulation, evasion, and inconsistencies in her statements.
- To contribute to forensic psychology research by discussing the role of voice-based deception detection in enhancing investigative techniques for cases involving interpersonal relationships and premeditated criminal intent.

Methods

This study followed a case study approach, utilizing Layered Voice Analysis (LVA) 6.50 to assess deception, stress markers, and emotional fluctuations in XYZ's publicly available phone conversations. The analysis aimed to identify inconsistencies in her statements related to the Sharon Raj murder case and evaluate possible deception.

Data Collection

Primary data

The study used publicly available call recordings and WhatsApp voice messages of XYZ.

Forensic tool

LVA 6.50 was used to detect stress, hesitation, anticipation, and deception markers by analyzing vocal tone, pitch variations, and emotional responses.

Data Analysis

Emotional and cognitive patterns

The analysis examined stress levels, emotional instability, and cognitive suppression to detect deception.

Key segment analysis

High-risk and inconclusive segments were identified, particularly those related to the poison, medicine, and relationship details.

Comparison across reports

Findings from multiple LVA reports were compared to evaluate patterns of deception and inconsistencies.

Ethical Considerations

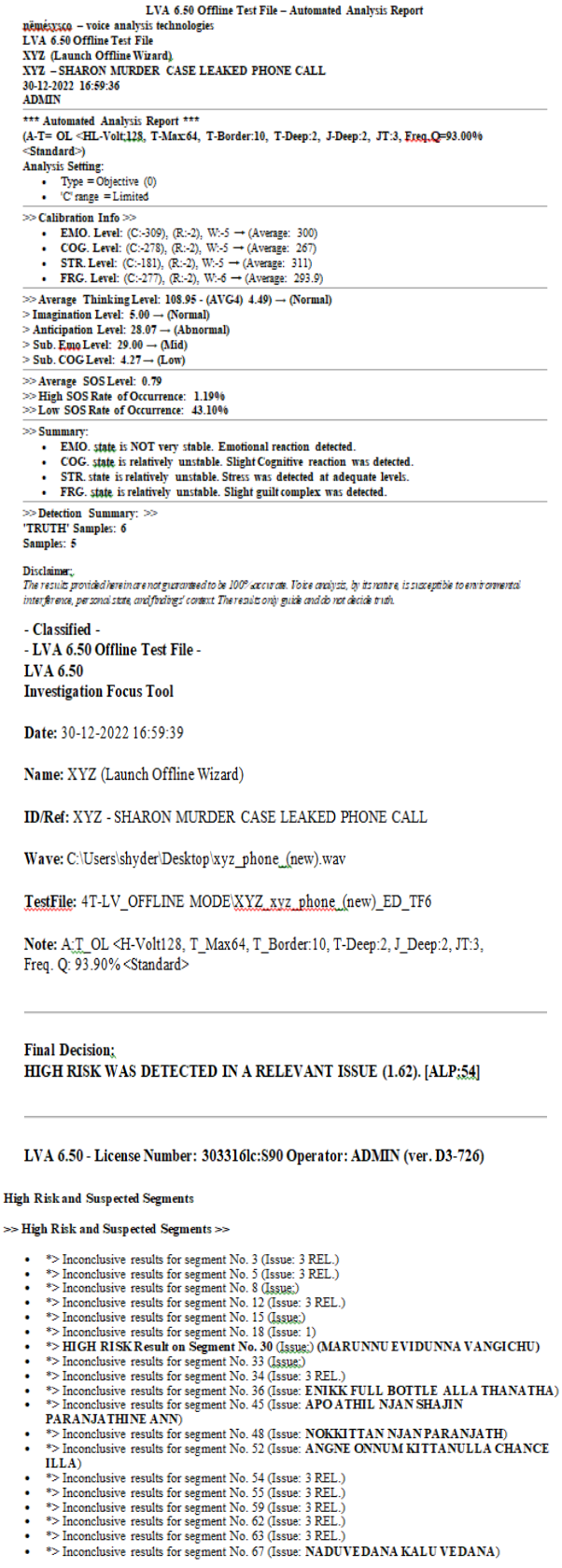
- The study strictly used publicly available data to ensure compliance with ethical standards.
- Findings were presented objectively, avoiding speculation or personal bias.
- The research aimed to supplement forensic investigations and did not replace legal proceedings.

Results and Discussion

Emotional and Cognitive State Analysis

The LVA 6.50 report (Figure 1) indicates that XYZ's emotional and cognitive states were highly unstable during the conversation. The key findings include:

- Emotional Level (Sub EMO Level: 29.00 - Mid.) suggests moderate emotional distress, indicating fluctuations in stress, anxiety, and deception.
- Cognitive Level (Sub COG Level: 4.27 - Low) suggests low cognitive engagement, meaning her responses were likely rehearsed or influenced by external factors rather than spontaneous.
- Anticipation Level: 28.67 (Abnormal) indicates significant forethought and planning, often linked to pre-meditation or deception.



LVA 6.50 Offline Test File – Automated Analysis Report

nemesysco – voice analysis technologies

LVA 6.50 Offline Test File

XYZ (Launch Offline Wizard)

XYZ – SHARON MURDER CASE LEAKED PHONE CALL

30-12-2022 16:59:36

ADMIN

*** Automated Analysis Report ***

(A-T= OL <HL-Volt:128, T-Max:64, T-Border:10, T-Deep:2, J-Deep:2, JT:3, Freq.Q=93.00% <Standard>)

Analysis Setting:

- Type = Objective (0)
- 'C' range = Limited

>> Calibration Info >>

- EMO. Level: (C:-309), (R:-2), W:-5 → (Average: 300)
- COG. Level: (C:-278), (R:-2), W:-5 → (Average: 267)
- STR. Level: (C:-181), (R:-2), W:-5 → (Average: 311)
- FRG. Level: (C:-277), (R:-2), W:-6 → (Average: 293.9)

>> Average Thinking Level: 108.95 - (AVG4) 4.49) → (Normal)
> Imagination Level: 5.00 → (Normal)
> Anticipation Level: 28.07 → (Abnormal)
> Sub. Emo Level: 29.00 → (Mid)
> Sub. COG Level: 4.27 → (Low)

>> Average SOS Level: 0.79
>> High SOS Rate of Occurrence: 1.19%
>> Low SOS Rate of Occurrence: 43.10%

>> Summary:

- EMO. state is NOT very stable. Emotional reaction detected.
- COG. state is relatively unstable. Slight Cognitive reaction was detected.
- STR. state is relatively unstable. Stress was detected at adequate levels.
- FRG. state is relatively unstable. Slight guilt complex was detected.

>> Detection Summary: >>
'TRUTH' Samples: 6
Samples: 5

Disclaimer:
The results provided herein are not guaranteed to be 100% accurate. Voice analysis, by its nature, is susceptible to environmental interference, personal state, and findings' context. The results only guide and do not decide truth.

- Classified -
- LVA 6.50 Offline Test File -
LVA 6.50
Investigation Focus Tool

Date: 30-12-2022 16:59:39

Name: XYZ (Launch Offline Wizard)

ID/Ref: XYZ - SHARON MURDER CASE LEAKED PHONE CALL

Wave: C:\Users\shyder\Desktop\xyz_phone_(new).wav

TestFile: 4T-LV_OFFLINE MODE\XYZ_xyz_phone_(new)_ED_TF6

Note: A;T_OL <H-Volt128, T_Max64, T_Border:10, T-Deep:2, J_Deep:2, JT:3, Freq. Q: 93.90% <Standard>

Final Decision:
HIGH RISK WAS DETECTED IN A RELEVANT ISSUE (1.62). [ALP:54]

LVA 6.50 - License Number: 303316lc:S90 Operator: ADMIN (ver. D3-726)

High Risk and Suspected Segments

>> High Risk and Suspected Segments >>

- *> Inconclusive results for segment No. 3 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 5 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 8 (Issue:)
- *> Inconclusive results for segment No. 12 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 15 (Issue:)
- *> Inconclusive results for segment No. 18 (Issue: 1)
- *> HIGH RISK Result on Segment No. 30 (Issue:) (MARUNNU EVIDUNNA VANGICHU)
- *> Inconclusive results for segment No. 33 (Issue:)
- *> Inconclusive results for segment No. 34 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 36 (Issue: ENIKK FULL BOTTLE ALLA THANATHA)
- *> Inconclusive results for segment No. 45 (Issue: APO ATHIL NJAN SHAJIN PARANJATHINE ANN)
- *> Inconclusive results for segment No. 48 (Issue: NOKKITTAN NJAN PARANJATH)
- *> Inconclusive results for segment No. 52 (Issue: ANGNE ONNUM KITTANULLA CHANCE ILLA)
- *> Inconclusive results for segment No. 54 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 55 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 59 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 62 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 63 (Issue: 3 REL.)
- *> Inconclusive results for segment No. 67 (Issue: NADUVEDANA KALU VEDANA)

Figure 1: LVA 1st Report Results

- Stress Levels were detected at multiple points, but at an "acceptable" level, suggesting she attempted to maintain control over her emotions while discussing crucial aspects.

Risk and Deception Indicators

High-risk and suspected segments

Three segments were classified as HIGH RISK, suggesting major deception or stress triggers when discussing specific topics. 21 segments fell into the Medium-High Risk category, where inconsistencies and stress markers were observed.

Truth vs. deception analysis

Only 6 segments were categorized as "TRUTH", indicating very few reliable statements. 28 segments were labelled "INACCURACY", suggesting possible misrepresentation, hesitation, or deception. 7 segments showed EXTREME STRESS, while 6 showed HIGH TENSION, which are often correlated with concealing key information or emotional distress.

Key Segments with Inconclusive or High-Risk Results

Several critical segments showed medium to extreme stress or inconclusive results, indicating potential deception or withholding of key information. Notable examples include:

"Marunnuevidunnavangichu" (Where did you buy the medicine?) - Medium Risk

"Enikk full bottle allathannath" (I was not given the full bottle) - Medium Risk

"Apo athilnjanShajinparanjathinteann" (So what I said to Shajin...) - Medium Risk

"Avalveetilvarathemobilel..." (She didn't come home, only through mobile...) - Extreme Stress

The phrases related to the medicine, bottle, and involvement of others show stress markers and medium-to-high-risk classification, suggesting uncertainty, deception, or concealed information.

- Significant cognitive suppression, implying calculated responses rather than natural speech flow.
- Frequent emotional fluctuations, indicating attempts to control her reactions.

- Extreme stress in crucial segments, particularly when discussing the medicine, bottle, and the involvement of another person.

The findings from the LVA 6.50 analysis (Figure 1) suggest that XYZ may have been concealing crucial information about Sharon Raj's poisoning. The presence of stress markers, anticipatory thinking, and inconsistencies in responses supports the argument that:

She had prior knowledge and intent regarding the events leading to Sharon's poisoning.

Certain key details, particularly related to the medicine, were likely omitted or manipulated in her statements.

She exhibited psychological traits such as manipulation and deception, evident through cognitive suppression and rehearsed speech patterns.

Emotional and Cognitive State Analysis

The Layered Voice Analysis (LVA) 6.50 (Figure 2) indicates significant fluctuations in XYZ's emotional and cognitive states, pointing to stress, deception, and potential manipulation.

Emotional level (Sub EMO Level: 31.73 - HIGH! - Possible P.A.)

Indicates high emotional instability and possible psychological arousal, which may suggest anxiety, fear, or deceptive behaviour.

Cognitive level (Sub COG Level: 9.11 - Low)

A low cognitive response suggests that her statements were not entirely spontaneous and could have been rehearsed or influenced by external pressure.

Anticipation level 27.68 (Abnormal)

A high anticipation level is often associated with pre-meditation or an attempt to maintain control over a deceptive narrative.

Stress levels

High stress and tension markers were detected, especially when discussing critical aspects of the case. Slight guilt complex detected, which may indicate internal conflict or remorse regarding specific elements of the crime.

- Classified -

- LVA 6.50 Offline Test File -

Date: 30-12-2022 15:49:23
Name: XYZ (Launch Offline Wizard)
ID/Ref: XYZ - SHARON MURDER CASE - LEAKED VOICE
Wave: C:\Users\hyder\Desktop\sharon-xyz_(new).wav
TestFile: d:\L.V.-OFFLINE MODE\XYZ_sharonxyz_(new)_ED.TF6
Note: A.T.= OL <HL-Vol:128, T-Max:64, T-Border:10, T-Deep:2, J-Deep:2, JT:3,
Freq Q= 89.00%<Standard>

Final Decision: - HIGH RISK WAS DETECTED IN A RELEVANT ISSUE(1.23)- [ALP:48]

LVA 6.50 - License Number: 303316ic:590 Operator: ADMIN (rev. D3-726)

nemesysco
voice analysis technologies
- LVA 6.50 Offline Test File -
XYZ(Launch Offline Wizard)
30-12-2022 15:49:09
XYZ SHARON MURDER CASE - LEAKED VOICE
ADMIN
***** Automated Analysis Report *****
(A.T.= OL <HL-Vol:128, T-Max:64, T-Border:10, T-Deep:2, J-Deep:2, JT:3, Freq Q= 89.00% <Standard>)
***** Automated Analysis Report *****
Analysis Setting: Type-Objective (0), 'C' range: Limited
>> **Calibration Info** >>
> EMO. Level: (C-270), (R-2), (W-4) (Average: 353)
> COG. Level: (C-276), (R-2), (W-7) (Average: 272)
> STR. Level: (C-251), (R-2), (W-3) (Average: 331)
> FRG. Level: (C-28), (R-2), (W-4) (Average: 26.16)
>> Average Thinking Level: 87.79 - (AVL: 5.43) - (Normal)
>> Imagination Level: 51 - (Normal)
>> Anticipation Level: 276 - (Abnormal)
>> Sub. EMO Level: 3.71 (Highest!) - Possible P.A.
>> Sub. COG Level: 1.91 - (Low)
- Possible white noise! due to arousal
>> Average SOS Level: 0.84
>> High SOS Rate of occurrence: 6.67%
>> Low SOS Rate of occurrence: 40%
- EMO. state is NOT stable. High emotional reaction detected
- COG. state is relatively stable. Logical conflict was not detected
- STR. state is relatively unstable. Stress was detected at acceptable levels.
- FRG. Level is relatively unstable. Slight guilt complex was detected
>> Detection Summary:
'TRUTH' Samples: 8

>> **High Risk and Suspected Segments** >>
*> Inconclusive results for segment No. 4 (Issue: WITHOUT INFORMING THE MARRIAGE)
*> Inconclusive results for segment No. 5 (Issue: WITHOUT GIVING ANY DETAILS OF THE MARRIAGE)
*> Inconclusive results for segment No. 10 (Issue: CHEATING YOU...)
*> Inconclusive results for segment No. 19 (Issue: REL.)
*> Inconclusive results for segment No. 24 (Issue: THAT IS REACTION OF JUICE)
*> Inconclusive results for segment No. 34 (Issue: IN MY HAND)
*> Inconclusive results for segment No. 40 (Issue: .)
*> Inconclusive results for segment No. 46 (Issue: .)
*> Inconclusive results for segment No. 48 (Issue: REL.)
*> Inconclusive results for segment No. 50 (Issue: .)
*> Inconclusive results for segment No. 63 (Issue: REL.)
*> Inconclusive results for segment No. 66 (Issue: REL.)
*> HIGH RISK Result on Segment No. 69 (Issue: POISON IS NOT FROM HERE...)
REL (3): "ME" - - TRUTH <N.D.I.L.R>
REL (4): "WITHOUT INFORMING THE MARRIAGE" - MEDIUM RISK(P3) <D.I.H.R>
REL (5): "WITHOUT GIVING ANY DETAILS OF THE MARRIAGE" - MEDIUM RISK(P3) <D.I.H.R>
REL (7): "PHOTOS AND VIDEOS" - INACCURACY <INC.M.R+>

Disclaimer: The results provided herein are not guaranteed to be 100% accurate. Voice analysis, by its nature, is susceptible to environmental noises, extreme emotional states and circumstantial events. Use the results only together with other findings.

LVA 6.50 Offline Test File
XYZ (Launch Offline Wizard)
Date: 30-12-2022 15:49:09
Case: XYZ - SHARON MURDER CASE - LEAKED VOICE
Operator: ADMIN

REL (8): "SHOULD HAVE BEEN DELETED" - INACCURACY <INC.I.M.R+>
REL (9): "YOU_." - High Anticipation <INC.M.R>
REL (10): "CHEATING YOU..." - MEDIUM RISK <D.I.H.R>
REL (12): "LEAVING YOU WITHOUT GIVING CORRECT EXPLANATION" - HIGHLY STRESSED <INC.I.M.R+>
REL (13): "I SHOULD HAVE BEEN GONE" - TRUTH <N.D.I.R>
REL (15): "I INFORMED YOU" - HIGHLY STRESSED <INC.M.R+>
REL (16): "JUICE" - TRUTH <N.D.I.R>
REL (19): "JUICE" - MEDIUM RISK <D.I.H.R>
REL (20): "TRUTH ON THE JUICE" - STRESSED <N.D.I.R>
REL (21): "ABOUT NORMAL TASTE" - STRESSED <D.N.D.I.R>
REL (22): "IT DOES NOT HAVE ANYTHING, RIGHT" - INACCURACY <INC.M.R+>
REL (23): "IT IS NOT THAT MEDICINE" - MEDIUM RISK <D.I.H.R>
REL (24): "IT IS NOT THAT MEDICINE" - HIGHLY STRESSED <INC.M.R>
REL (27): "I GAVE THE MEDICINE FULLY TO ICHAYAN" - STRESSED <N.D.I.R>
REL (28): "ICHAYAN ALREADY KNOWS IT" - HIGHLY STRESSED <INC.M.R>
REL (31): "IT WAS THE LAST DAY TO TAKE THE MEDICINE" - HIGHLY STRESSED <INC.M.R>
REL (33): "THAT DOCTOR HAS NOT PRESCRIBED THE MEDICINE" - HIGHLY STRESSED <INC.M.R>
REL (36): "NEVER.." - STRESSED <D.N.D.I.R>
REL (37): "NO_." - STRESSED <D.N.D.I.R>
REL (38): "I AM NOT SURE" - LOW RISK(P1) <D.I.H.R>
REL (39): "DID I ASK YOU SOMETHING?" - STRESSED <D.N.D.I.R>
REL (40): "IN MY HAND" - INACCURACY <INC.M.R+>
REL (41): "REL" - HIGHLY STRESSED <INC.M.R>
REL (42): "I FEEL LIKE BAD..." - INACCURACY <D.I.H.R>
REL (43): "REL" - INACCURACY <INC.M.R+>

Figure 2: LVA 2ndReport results

Risk and Deception Indicators

Detection Summary

- 8 segments classified as "TRUTH" – very few responses were considered reliable.
- 15 segments showed signs of STRESS, with 12 classified as HIGHLY STRESSED and 1 as EXTREME STRESS.
- 16 segments marked as INACCURACY, suggesting deceptive or inconsistent responses.
- 13 segments classified as MEDIUM RISK, with 1 HIGH-RISK segment, indicating potential deception in key areas.
- Critical Segments of High Risk and Suspected Deception

"*Without informing the marriage*" - *Medium Risk*
"Without giving any details of the marriage" - Medium Risk
"Cheating you..." - Medium Risk
"Is that reaction of juice?" - Medium Risk
"The same medicine was given to Sharon" - Stressed
"Poison is not from here..." - Medium Risk

The phrases related to the marriage, medicine, and poison triggered stress markers and high-risk classifications, suggesting uncertainty, deception, or withheld information.

Key Findings from High-Risk Statements

Statements about marriage and relationship

The medium-risk classification of her responses about not informing the marriage and deleting photos/videos suggests possible concealment of crucial details.

Statements about the juice and medicine

When discussing the juice and medicine, XYZ exhibited high stress, inaccuracy, and medium-risk markers, suggesting she may not have been truthful about what was given to Sharon. Key phrases like "*It was the last day to take the medicine*" and "*I have given the medicine fully to Ichayan"* were marked as HIGHLY STRESSED, indicating potential deception.

Statements about poison source

Her claim *that "Poison is not from here"* was classified as a medium-risk statement, raising doubts about the origin of the toxic substance. High stress and deception markers when discussing the medicine and juice, which aligns with the theory that Sharon was poisoned deliberately. Concealment of information about her marriage and relationship status, suggesting an effort to hide personal motives. Uncertainty about the poison's source, which raises doubts about the accuracy of her narrative.

The LVA findings (figure 2) reinforce the psychological profile of a potentially deceptive suspect attempting to manipulate her responses. The high anticipation, stress markers, and inconsistencies in her statements support the argument that:

- She may have carefully planned aspects of the poisoning.
- Certain details about how Sharon consumed the poisoned drink remain unclear.
- There are contradictions in her statements regarding the marriage, medicine, and source of poison, indicating possible deliberate misinformation.

Discussion

The Layered Voice Analysis (LVA) 6.50 reports (Figures 1 and 2) from both assessments of XYZ's leaked phone conversations reveal significant emotional distress, cognitive suppression, and deception markers. Across both reports, key findings suggest that her statements exhibited high anticipation, stress, and inconsistencies, particularly when discussing the medicine, relationship, and poison. Both reports indicate high emotional instability, with stress markers detected in crucial segments. Cognitive suppression (low cognitive engagement) suggests that some responses were rehearsed or influenced, rather than natural. Anticipation levels were abnormally high, hinting at pre-meditation or an effort to control a deceptive narrative.

In the court's verdict, it is confirmed that XYZ deliberately misled investigators about the Ayurvedic medicine she administered, the marriage pro-

posal she denied, her relationship status, and the poison used in the crime. These were the critical aspects of the crime. The investigation team integrated physical evidence and cyber evidence, successfully unveiled these deceptions, and established her intent. Had the Kerala Police utilized Layered Voice Analysis (LVA) during the initial interrogations, they could have efficiently screened these lies in real-time and corroborated them with existing evidence like any other forensic evidence. This would have significantly reduced investigation time and facilitated effective forensic inquiry.

Conclusion

The combined analysis of both LVA reports strongly suggests deception, inconsistencies, and psychological distress in XYZ's statements. Her high stress and anticipation levels indicate possible pre-meditation. She avoided clear answers regarding the poison's origin and the medicine given to Sharon, raising doubts about her truthfulness. The emotional fluctuations and cognitive suppression align with manipulative or deceptive behavior, requiring further corroboration with physical evidence and behavioral analysis.

Implications

This study has significant implications for forensic investigations especially in the application of voice-based deception detection techniques. The findings highlight the potential of LVA as a supplementary forensic tool for assessing cognitive suppression and emotional instability in criminal suspects. In that way, it enhances investigative accuracy. The study also challenges traditional gender narratives in love-hate crimes. This research emphasizes the need for a subtle understanding of deception and manipulation beyond stereotypical victim-perpetrator roles. Additionally, its findings call for ethical considerations in the forensic use of LVA by understanding its reliability and admissibility in legal contexts. The research accentuates the essentiality of interdisciplinary collaboration between forensic psychologists, law enforcement, and legal experts to contribute to more informed and effective criminal justice practices.

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