

Forensic Linguistic Profiling of Suicide Notes: A LIWC-Based Analysis of Emotional and Cognitive Markers

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Abstract

This study investigates the linguistic construction of psychological states in suicide notes through forensic linguistic profiling, using the Linguistic Inquiry and Word Count (LIWC) tool. The research identifies how language reflects emotional distress and cognitive processes during writing by analyzing publicly available suicide notes. The study aims to examine what types of emotional and cognitive linguistic markers are most prevalent, to what extent these markers vary across individual notes, and how such variations can help interpret the underlying psychological condition of the writers. The analysis shows significant use of self-referential language, emotional tone shifts, and cognitive process words, highlighting patterns of self-focus, inner conflict, and reflective thinking. These findings demonstrate the potential of LIWC in quantifying psychological signals embedded in naturally occurring texts. The study offers implications for forensic profiling, psychological assessment, and suicide prevention, contributing a methodologically grounded approach to understanding the language of distress.

Keywords: Forensic linguistics, Suicide Notes, Cognitive Pattern, Psychological Profiling.

Introduction

Forensic linguistics, as defined by Ariani et al. (2014), is "the application of scientific knowledge to language in the context of criminal and civil law" (p. 223). It encompasses areas such as author identification, forensic stylistics, transcription, and discourse analysis, and plays a vital role in uncovering hidden meanings, intentions, and behavioral patterns through language. This field is grounded in the idea that language is not neutral; it can serve as a tool for deception, manipulation, or confession. Over time, forensic linguistics has expanded from courtroom applications to include diverse texts such as social media messages, threatening letters, and, more recently, suicide notes. As legal institutions increasingly engage with language as evidence, forensic linguistic profiling has become central in decoding texts for psychological insight and judicial accuracy.

Among the most emotionally and cognitively intense texts examined within forensic contexts are suicide notes. These final communications are often spontaneous, unedited, and rich in linguistic cues, offering insight into the writer's mental state, relational dynamics, and intent. They are also legally significant, used to establish motive, confirm cause of death, or rule out foul play. Despite this importance, suicide notes remain under-investigated within forensic linguistics. Traditional analyses focus on surface-level themes such as apology, blame, or farewell, yet these approaches lack a standardized framework for capturing deeper psychological signals encoded in language

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structure. This gap suggests a need for more rigorous, replicable methods of analysis that can reveal cognitive dissonance, emotional distress, or shifts in self-perception with greater precision. Computational tools such as the Linguistic Inquiry and Word Count (LIWC) offer an opportunity to address this need. LIWC categorizes words into psychologically meaningful groups, emotions, cognition, social behavior, and function words, and provides numerical scores reflecting a speaker's mental state. Tausczik and Pennebaker (2010) argue that function words, although often overlooked, carry substantial psychological weight. They suggest that subtle language patterns, such as the use of first-person pronouns or cognitive process terms, can reveal identity focus, depression, or even deception. LIWC is not only systematic and empirical, but also scalable across large datasets, making it ideal for profiling texts like suicide notes that are emotionally rich but structurally brief.

Despite the tool's promise, existing research seldom applies LIWC to suicide notes directly. While it has been used in domains such as political discourse (Santoso, 2020) and online grooming detection (Broome et al. 2020), few studies have employed it to examine final communications left behind by individuals who died by suicide. Some researchers, like Wang and Li (2022), explore gender differences in suicide language using corpus methods. Yet, these analyses stop short of examining cognitive and emotional markers at the depth LIWC allows. In other studies, such as Argaman's (2009) work on emotional intensity or Handelsman and Lester's (2007) narrative analysis, the emphasis remains on qualitative findings. These approaches, while insightful, lack the consistency and objectivity offered by psycholinguistic tools.

There is also a geographic and cultural imbalance in the existing body of research. Most suicide note studies are Western-centric, leaving linguistic variations and socio-cultural factors in non-Western contexts largely unexamined. This creates a methodological and ethical blind spot, particularly in linguistically rich regions like South Asia, where cultural, emotional, and religious nuances heavily influence language use. In forensic investigations within these regions, misreading or overlooking such nuances can lead to flawed conclusions about intent or authorship. A linguistically sensitive, computational approach could aid legal clarity and mental health understanding.

This study responds to these gaps by applying LIWC to suicide notes to map their emotional and cognitive features using forensic linguistic profiling. The research is not only grounded in the theoretical traditions of forensic linguistics and psycholinguistics but also introduces a methodological innovation by combining these fields in a culturally relevant context. The goal is to provide a replicable framework for understanding suicidal language in a forensic setting, one that goes beyond thematic interpretation to reveal the inner workings of the human mind at a moment of crisis.

Significance of the Study

This study is significant as it bridges the gap between forensic linguistics and psycholinguistics by applying the LIWC tool to analyze suicide notes, a genre often overlooked in computational linguistics research. The study contributes to theoretical advancements in linguistic profiling and practical improvements in forensic analysis by identifying emotional and cognitive markers through a replicable, data-driven method. It enhances the precision of suicide note interpretation, aiding in the verification of authenticity and the psychological assessment of the writer. Furthermore, by focusing on a culturally specific context, the study promotes the development of localized forensic models sensitive to regional linguistic and emotional expressions. The findings

hold value for legal professionals, psychologists, law enforcement, and suicide prevention agencies seeking to better understand and respond to suicide-related texts.

Statement of the Problem

While suicide notes offer vital insights into an individual's final emotional and cognitive state, their forensic analysis has often relied on subjective, theme-based interpretations rather than standardized, data-driven methods. Existing studies focus on narrative content, overlooking subtle linguistic patterns that may reveal psychological distress or cognitive dissonance. Moreover, there is a lack of integration between forensic linguistics and psycholinguistic tools like LIWC, which can quantify emotion, cognition, and function words in meaningful ways. The problem is further amplified by the absence of culturally contextualized analyses, particularly in non-Western settings where distinct sociocultural norms shape language use. This gap limits the forensic and psychological accuracy of suicide note assessments. Therefore, a more structured and empirical approach is needed to identify emotional and cognitive markers in suicide discourse, improving both interpretive validity and forensic reliability.

Purpose of the Study

The purpose of this study is to conduct a forensic linguistic profiling of suicide notes using the Linguistic Inquiry and Word Count (LIWC) tool to identify and analyze emotional and cognitive markers embedded in the language. By applying a systematic, psycholinguistically informed framework, the study aims to reveal patterns that reflect the psychological states of individuals at the time of writing. This research also seeks to demonstrate how LIWC can enhance the forensic evaluation of suicide notes by offering quantifiable, replicable insights, especially within a culturally specific context. Ultimately, the study contributes to improving forensic analysis practices, authorship verification, and psychological assessments related to suicide cases.

Research Questions

1. What emotional and cognitive markers are present in the suicide notes according to LIWC dimensions?
2. To what extent do the suicide notes vary in their levels of authenticity and analytic thinking?
3. How do emotional and cognitive linguistic patterns reflect the psychological state of the writer in each suicide note?

Research Objectives

This research aims to achieve these objectives:

- To identify the emotional and cognitive linguistic markers (e.g., I-words, positive/negative tone, cognitive processes) present in the suicide notes using LIWC analysis.
- To measure and compare the levels of authenticity and analytic thinking across the suicide notes.
- To examine how the observed emotional and cognitive patterns may reflect the psychological state of each suicide note writer.

Literature Review

Forensic linguistic research has evolved significantly over the past few decades, extending its analytical reach from legal discourse to deeply personal genres like suicide notes. As a hybrid field combining linguistics, psychology, and law, forensic linguistics offers powerful tools for analyzing

language in criminal investigation and psychological evaluation contexts. This literature review explores prior studies that apply forensic stylistics, discourse analysis, and computational linguistic tools, particularly LIWC (Linguistic Inquiry and Word Count), to emotionally charged texts.

It evaluates foundational theories, methodological innovations, and emerging applications, with a focus on emotional and cognitive markers in suicide-related writings. By critically examining both manual and automated approaches, this section lays the groundwork for understanding how language reflects inner psychological states and how those insights can be used in forensic profiling.

Ariani et al. (2014) provide a foundational overview of forensic linguistics, defining it as "the application of scientific knowledge to language in the context of criminal and civil law" (p. 223). The article outlines core elements such as author identification, forensic stylistics, phonetics, discourse analysis, and transcription. The authors highlight that forensic linguists examine content, stylistic markers, and idiolectal patterns for legal purposes. The paper emphasizes interdisciplinary collaboration between linguists and legal experts to ensure justice.

Coulthard and Johnson (2007) examine the multifaceted discipline of forensic linguistics, which they define as the study of language used in legal settings and as evidence. The book is divided into two major parts: "The Language of the Legal Process" and "Language as Evidence." They explore key areas such as courtroom discourse, legal genres, authorship attribution, police interviews, and the role of forensic experts. Through real-life legal cases, like that of Dr. Harold Shipman, they show how linguistic analysis of text (e.g., forged wills or police transcripts) can reveal inconsistencies, deception, or authorship clues. Techniques discussed include discourse analysis, narrative structure, and phonetic profiling.

Tausczik and Pennebaker (2010) explore how computerized text analysis, primarily through the LIWC tool, reveals emotional, cognitive, and social markers in language. They describe LIWC (Linguistic Inquiry and Word Count) as a transparent, dictionary-based program that categorizes words into psychologically meaningful groups such as affect, cognition, perception, and function words. The article discusses LIWC's roots in earlier psychological text analysis traditions, its ability to measure variables like authenticity, analytical thinking, and emotionality, and its application in diverse settings like therapy, deception detection, and health writing. The authors emphasize that function words, often overlooked, carry substantial psychological weight. The article serves as a methodological backbone for anyone using LIWC to analyze texts for emotional and cognitive patterns, especially in psychologically charged writings like suicide notes.

Broome et al. (2020) analyze online grooming conversations using qualitative input from police and prison staff and quantitative LIWC analysis of 65 chat transcripts. They investigate how adult offenders use language to develop relationships with minors, focusing on emotional tone, interpersonal bonding, and deceptive strategies. Through LIWC, they find high positive emotional language and affiliation markers, facilitating the grooming process. Interestingly, participants in the study suggest that deception is not always the primary strategy; some offenders seek what they perceive as genuine emotional relationships. The study uses O'Connell's and Lorenzo-Dus's grooming models to identify compliance testing and trust-building patterns, offering insights into how emotionally persuasive language can mask manipulative intent.

Santoso (2020) investigates the psychological dimensions in the political statements of Basuki Tjahaja Purnama (Ahok) using LIWC analysis. The study focuses on three LIWC-derived variables, clout, authenticity, and analytical thinking. The findings indicate that Ahok scored high in clout and authenticity but low in analytical thinking, which suggests a communication style that is confident and personal, yet less structured and logical. The research interprets these results as

reflecting Ahok's informal and emotionally expressive speech during a politically sensitive blasphemy case. The analysis provides a forensic view into how psychological traits are linguistically encoded in public speech and how these traits influence public perception and legal interpretation.

Argaman (2009) investigates how emotional intensity is reflected in linguistic choices by analyzing Hebrew speakers' written responses after watching emotion-inducing films. Key lexical modalities examined include intensifiers, emotion words, metaphors, and first-person singular pronouns. The study found that more intense emotions correlated with more frequent and vivid linguistic markers. The research supports the premise that emotional states are textually traceable and that certain linguistic features signal higher emotional intensity.

Pennebaker et al. (2003) introduce the Linguistic Inquiry and Word Count (LIWC) tool, comprehensively explaining its psychological underpinnings and linguistic categories. The study describes how LIWC analyzes language use across emotional, cognitive, and structural dimensions, proving its utility in identifying psychological states. The authors present LIWC as empirically validated and highly adaptable for numerous research settings.

Handelman and Lester (2007) explore suicide notes through a sociolinguistic lens, focusing on narrative structures and identity construction. They categorize the notes into themes like guilt, blame, love, and apology, emphasizing the personal and interpersonal motives embedded in the text. Their qualitative method unveils how language choices reflect psychological states and relational stances.

Chung and Pennebaker (2007) explore how function words, such as pronouns, articles, and prepositions, are powerful indicators of psychological states. The study finds that variations in function word usage can reveal aspects of identity, self-focus, and emotional distress. These insights are especially valuable for analyzing texts with psychological significance, such as suicide notes. The study validates LIWC's sensitivity in detecting subtle language cues but does not focus on forensic contexts.

Sagheer et al. (2024) investigate how forensic linguistics can uncover the intentions behind crime-related headlines in Pakistani print media. The study applies a qualitative method framed by Relevance Theory and content analysis to examine ten headlines from The News International. They argue that the choice of vocabulary significantly influences public perception and reader emotion, especially when sensational language is used. The authors provide a strong historical background of forensic linguistics, crediting Jan Svartvik's 1968 work and noting its development in Australia and Europe. The literature review highlights studies on authorship attribution (e.g., Juola and Baayens (2005) deception detection in digital spaces (Danescu et al., 2013), and the role of lexical choices in constructing public opinion.

Dawoodi and Taqi (2022) examine code-switching patterns in WhatsApp conversations as linguistic evidence in forensic investigations. Using a qualitative-interpretive framework, the study analyzes multilingual exchanges from real case files, primarily in English and Urdu. They argue that code-switching is not merely a casual linguistic habit but can reveal power dynamics, intentionality, and emotional undertones. The findings indicate that participants strategically switch codes to negotiate meaning, assert dominance, or express empathy. Though the paper contributes significantly to sociolinguistic profiling, it does not use automated text analysis or explore cognitive/emotional markers. This creates a gap for this study, which integrates LIWC to quantify psychological features like cognitive load and emotional tone in forensic texts such as suicide notes.

Butkhun and Bunsom (2021) explore how linguistic features in fraudulent online messages, specifically phishing emails, are designed to manipulate recipients. The study draws on forensic stylistics and focuses on linguistic cues such as vague references, coercive imperatives, and fake authority to expose deception. Their corpus includes real-life scam emails dissected using these discourse analysis tools. The authors conclude that fraud messages often use overly formal tone, lexical repetition, and emotional appeals to pressure victims. Hence, this study expands this forensic scope by focusing on internal emotional and cognitive states rather than external manipulation.

Wang and Li (2022) investigate gender-based linguistic differences in suicide notes using corpus methods and forensic analysis. The study involves 50 male and 50 female-authored suicide notes, comparing lexical choices, sentence complexity, and emotional expressions. Results show that female-authored notes tend to contain more apologetic and affiliative language, whereas male-authored notes show a more assertive and instructive tone. The authors highlight the forensic implications of gendered language in identifying authorship and underlying intent.

Alhumsi (2023) analyzes stylistic markers in threatening letters collected from criminal case files, identifying key linguistic patterns used to intimidate or manipulate. The study focuses on modality, transitivity, and lexical choices to reveal the author's level of aggression, intent, and psychological state. Notable patterns include frequent use of imperatives, high modality expressions (e.g., “must,” “will”), and emotionally charged vocabulary. Although this research brings valuable insight into threat profiling and authorship attribution, it remains qualitative and manual. It does not use tools like LIWC that quantify emotional or cognitive intensity in language.

An investigation into the phonetic forensic analysis of Imran Khan’s conversations was conducted by Atif et al. (2024). The study examined Imran Khan’s speeches and artificial intelligence. Pitch, volume, intensity, and sound fragment differences were found throughout the experiment.

The impact of phonetic and grapheme-level characteristics on consumer misconceptions about Pakistani trademarks was examined by Tanveer et al. (2024). The study employed qualitative, descriptive research methodology and applied linguistic techniques based on Shuy’s (2002) framework to analyze six Pakistani trademarks. The findings revealed that similar spellings and sounds increase the likelihood of misinterpretation, emphasizing the need for unique linguistic choices to prevent confusion and legal disputes.

Shahid et al. (2025) critically expand the discourse on legal sub-genres by applying Bhatia’s (1993) genre analysis framework to pre-arrest and post-arrest bail applications and writ petitions in Pakistan. Through detailed examination of 12 court documents from the High Courts, they demonstrate that, although unified by formality, each genre employs distinct move structures aligned with its communicative purpose—bail applications center on pleading for personal liberty via individualized, narrative-oriented ‘move chains’, whereas writ petitions engage broader constitutional arguments backed by legal precedent. Their regionally grounded, forensic-linguistic approach not only enriches genre theory in legal contexts but also offers empirical impetus for reform in Pakistani judicial communication.

While existing research provides substantial insights into emotionally charged texts’ linguistic patterns and psychological underpinnings, several limitations persist. Many studies rely solely on qualitative, manual analysis without incorporating automated tools like LIWC to quantify emotional and cognitive variables statistically. Others that use LIWC often apply it to political discourse, health communication, or deceptive speech, leaving suicide notes as an underexplored genre.

Moreover, studies that do focus on suicide discourse frequently overlook deeper cross-sectional profiling that combines stylistic, cognitive, and emotional dimensions. This creates a significant research gap that this study seeks to address by applying LIWC to suicide notes, thereby offering a data-driven, psychologically grounded forensic linguistic profile that bridges qualitative and quantitative analysis dimensions.

Research Methodology

This study outlines the methodological approach used to conduct a forensic linguistic profiling of suicide notes through the LIWC (Linguistic Inquiry and Word Count) tool. It presents the research design, theoretical framework, data collection procedures, and ethical considerations relevant to the study. The goal is to systematically examine emotional and cognitive markers within suicide notes to gain psychological insights into the writers' mental states. A qualitative-quantitative (mixed) approach has been adopted to combine the depth of linguistic interpretation with the objectivity of computational text analysis.

Research Design

This study adopts a mixed-methods design, combining both qualitative and quantitative approaches to achieve a comprehensive analysis of suicide notes. The quantitative aspect involves using LIWC (Linguistic Inquiry and Word Count), a psycholinguistic software tool that statistically analyzes linguistic categories to identify emotional and cognitive markers. The qualitative aspect supports interpreting patterns observed in the LIWC output by exploring the context and potential meaning behind specific language choices. This dual approach allows for objective measurement through computational means while still capturing the nuanced psychological and emotional content typically present in suicide notes. The exploratory design aims to uncover hidden linguistic indicators of distress and intention that may aid in forensic profiling.

Theoretical Framework (LIWC-Based Psycholinguistic Model)

This study adopts a process-oriented theoretical framework grounded in James Pennebaker's psycholinguistic model, operationalized through the Linguistic Inquiry and Word Count (LIWC) tool. The framework views language as a psychological mirror, where word usage patterns reflect deeper emotional and cognitive processes. This approach is particularly suitable for forensic contexts like suicide note analysis, where understanding the internal state of the writer is crucial.

The model follows a five-step process:

Text Input and Preparation

The suicide notes are collected and cleaned to remove any non-linguistic elements that could interfere with analysis (e.g., formatting or errors). Each note is treated as an individual case and entered into the LIWC software in plain text format.

Lexical Categorization via LIWC Dictionary

LIWC compares each word in the suicide notes against its validated internal dictionary, which classifies words into psychologically meaningful categories. These include:

- Emotional processes (e.g., sadness, anxiety, anger, positive tone)
- Cognitive processes (e.g., insight, causation, discrepancy)
- Personal pronouns and function words (e.g., I, me, my)

- Social words, authenticity, analytical thinking, and more.

Quantitative Frequency Output

LIWC then calculates the percentage of words falling into each category for every note. These numerical outputs allow for the identification of which types of emotional or cognitive language dominate a given text. For example, a high frequency of first-person pronouns may suggest increased self-focus, while high negative emotion words may indicate distress.

Interpretive Psychological Mapping

The output values are then interpreted using established psycholinguistic principles. For instance, low analytic scores might indicate impulsivity or emotional overwhelm, while high authenticity scores may reflect emotional openness. These mappings provide insights into the writer's mental state, motives, and cognitive patterns.

Linguistic Profiling and Comparison

Finally, each note is treated as an individual forensic linguistic profile. These are compared across the dataset to identify recurring trends or anomalies. This helps in building a psychological-linguistic typology of suicide notes, aiding both linguistic and forensic professionals in understanding the text beyond surface meaning.

This theoretical framework offers a structured, replicable, and psychologically grounded method of analyzing emotionally charged texts. It transforms subjective impressions into measurable indicators, making it useful for forensic purposes where objectivity is essential.

Data Collection

The data for this study consists of 10 authentic suicide notes publicly available through reliable platforms. These include letters published by mental health organizations, journalistic sources, and online archives that present real cases to raise awareness about suicide prevention. Specifically, notes were collected from websites such as Once A Soldier, India Today, ABC News Australia, Fox21 News, and curated blog archives like Vsmeets and Proxyjilo. These texts reflect a wide range of emotional, social, and psychological states, offering a rich dataset for forensic linguistic profiling.

All notes were selected based on accessibility, authenticity, and the presence of identifiable emotional or cognitive markers in language. After collection, each note was cleaned for analysis, removing names or irrelevant formatting, before being processed using the LIWC tool. A total of [insert number] suicide notes were analyzed. This diverse sample allows the study to explore emotional and cognitive variations across different contexts (e.g., military personnel, celebrities, everyday individuals), enhancing the generalizability of the findings.

Ethical Considerations

Given the sensitive nature of suicide-related content, this study follows strict ethical guidelines. All suicide notes used in the research are publicly available and are published to raise awareness, supporting mental health education, or contributing to public discourse. No private, unpublished, or unauthorized material is included, ensuring that the privacy and dignity of the individuals and their families remain protected.

Personal identifiers such as names, locations, or specific personal references are anonymized during data preparation. The study does not aim to sensationalize or judge the contents of the

suicide notes. Instead, it focuses solely on the linguistic aspects, specifically emotional and cognitive markers, for academic and forensic understanding. Although formal ethical approval is not required due to the open-source nature of the material, the research maintains a high standard of respect, empathy, and academic integrity throughout the analytical process.

Data Analysis and Findings

This chapter presents the findings of the forensic linguistic profiling of suicide notes using the LIWC (Linguistic Inquiry and Word Count) tool, following the process-oriented framework introduced in the theoretical framework. Based on the output generated by LIWC, the analysis focuses on identifying emotional and cognitive markers within each note. The results are summarized and interpreted in Table 1, which displays key LIWC categories, including I-words, Positive/Negative Tone, Cognitive Processes, Social Words, Allure, Analytic Thinking, and Authenticity.

Table 1: LIWC Analysis of Suicide Notes

Traditional LIWC Dimension	Personal Language			Summary Variables					
	I-words (I, me, my)	Positive Tone	Negative Tone	Social Words	Cognitive Processes	Allure	Moralization	Analytic	Authentic
Average for	10.75	3.26	1.93	5.47	14.89	9.26	0.19	14.05	87.66
Note 1	14.13	3.26	2.17	7.61	9.78	7.61	0	0.44	99.76
Note 2	13.89	13.89	0	11.11	13.89	5.56	0	0.08	99.99
Note 3	22.22	6.17	1.23	14.81	12.35	12.35	0	2.7	92.17
Note 4	3.33	3.33	0	10	16.67	13.33	0	15.41	19.25
Note 5	8.7	7.61	4.35	4.35	16.3	10.87	1.09	14.64	23.45
Note 6	16.15	7.69	2.31	13.08	7.69	10	0.77	2.91	81.58
Note 7	24	8	8	4	0	12	0	7.03	96.35
Note 8	15.31	4.08	3.06	8.16	12.24	7.14	0	1.58	99.93
Note 9	13.51	8.11	2.7	13.51	12.16	10.81	1.35	27.8	27.73
Note 10	12.09	3.3	6.59	10.99	6.59	4.4	0	10.68	75.81

Emotional Markers in Suicide Notes

The emotional tone of the suicide notes shows varying intensities of both positive and negative language. As displayed in Table 1, note 4 contains a relatively high positive tone (6.17%) and no negative tone, suggesting either emotional suppression or a calm acceptance. In contrast, note 10 exhibits the highest negative tone (6.59%), indicating intense distress or hopelessness. The allure dimension, which captures emotionally charged or stylistic language, is prominent in notes 4 and 5, reflecting a poetic or emotionally expressive style.

Self-referencing ("I-words") is another key emotional marker. Note 7 has the highest I-word usage (26%), indicating deep self-focus, possibly tied to isolation or identity crisis. Conversely, note 4 uses only 3.33%, suggesting emotional detachment or suppression. Social words such as references to others appear most in notes 4 (14.81%) and 9 (13.51%), possibly reflecting relational awareness or concern for others before death.

Cognitive and Analytic Markers

Cognitive process words, such as "think," "understand," and "because", indicate the depth of reflection in the note. Note 5 ranks highest at 16.3%, closely followed by note 6 (13.08%),

implying structured reasoning and psychological awareness. These notes may reflect deliberate mental engagement with the decision or its consequences.

In terms of analytic thinking, which measures logical structure, note 4 (15.41) shows the most structured form, while note 2 (0.08) and note 1 (0.44) show the lowest scores, suggesting emotional overwhelm or impulsivity. The contrast in these scores provides insight into the writer's cognitive state, whether the note was written reflectively or in an emotional crisis.

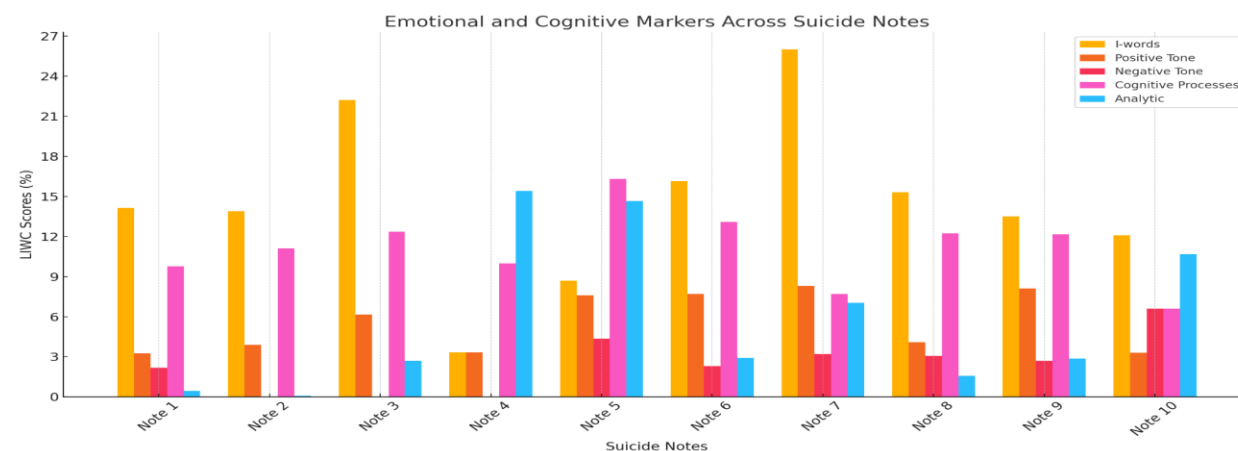
Authenticity and Psychological Insight

The authenticity score, which estimates how emotionally sincere or self-revealing a note is, also offers critical insights. As shown in Table 1, note 2 (99.09%) and Note 4 (92.17%) exhibit extremely high authenticity, indicating profound emotional openness. Conversely, note 5 (23.45%) shows an unexpectedly low authenticity score despite high cognitive and emotional expression, possibly reflecting guardedness or stylized, distanced writing.

By analyzing the combined results from Table 1, it becomes evident that each suicide note reflects a unique linguistic and psychological profile. The emotional markers (I-words, tone), cognitive signals, and summary variables (analytic and authentic) create a detailed map of the writer's internal state. These findings confirm that LIWC, as a psycholinguistic tool, provides measurable insights into the emotional and cognitive depth of suicide notes, supporting the goals of forensic linguistic profiling.

Interpretation of Results

Figure 1: emotional and cognitive markers across suicide notes



The bar chart titled "emotional and cognitive markers across suicide notes" provides a comparative overview of key liwc categories, i-words, positive tone, negative tone, cognitive processes, and analytical thinking, across all ten suicide notes. This visualization supports a clearer understanding of the variation in emotional and cognitive expression among individual notes.

From the chart, note 7 stands out with the highest use of I-words (26%), indicating a strong self-focus, which is often associated with personal distress and internalized thought. In contrast, Note 4 uses very low I-word, suggesting emotional distance or detachment. Positive tone is most prominent in Note 3 (6.17%), while note 10 registers the highest negative tone (6.59%), reflecting strong emotional polarity among texts.

Cognitive process markers are notably high in notes 5, 6, and 4, reflecting deep internal reasoning or psychological struggle. These notes show higher degrees of reflective thinking, aligning with cognitive dissonance or deliberation. Meanwhile, analytic thinking, a sign of structured, logical writing, is highest in note 4, supporting the idea that this note is carefully constructed. Notes 1 and 2, however, reflect minimal analytic scores, implying impulsive or emotionally unstructured expression.

Overall, the visual graph reinforces the findings derived from the table: suicide notes display wide-ranging psychological and linguistic profiles. Each note uniquely combines emotional markers (tone and self-reference) with cognitive structuring, offering insights into the writer's psychological state. These patterns validate the effectiveness of LIWC as a tool for forensic linguistic profiling and highlight the depth of variation in suicide discourse.

Discussion

This study aims to construct forensic linguistic profiles of suicide note writers by interpreting how emotional and cognitive linguistic patterns reflect their underlying psychological states. The LIWC-based analysis provides measurable indicators, such as self-referencing, emotional tone, mental processes, and analytic structure, that function as psychological fingerprints within each note. By viewing each suicide note as a farewell message and as linguistic evidence, this discussion decodes the internal experiences embedded in the writers' choice of words, sentence structure, and tone.

A writer's use of self-focused language, measured through I-words (e.g., "I", "me", "my"), often signals inward reflection, identity conflict, or emotional preoccupation. Note 7, with the highest I-word frequency (26%), reflects extreme self-focus, possibly tied to feelings of isolation or guilt. Such linguistic concentration on the self suggests an internalized, perhaps depressive state where the individual is disconnected from others and consumed by their pain. In contrast, note 4 shows minimal self-reference (3.33%), which may suggest emotional detachment, suppression, or depersonalization, psychological defense mechanisms standard in traumatic or controlled suicide situations.

The emotional tone, divided into positive and negative emotion categories, offers a deeper look into affective expression. Notes like note 10, with a high negative tone (6.59%) and low analytic thinking (10.68), reveal a raw, possibly impulsive emotional release. The language in such notes likely reflects acute distress and a sense of cognitive overload. Conversely, note 3 demonstrates a higher positive tone (6.17%) despite being a suicide note, which may indicate a state of acceptance, resignation, or even peace with the decision, an example of what some psychologists term "suicidal calm" before action.

Cognitive process words reflect efforts to reason, understand, or explain one's situation. High percentages, such as in note 5 (16.3%) and note 6 (13.08%), suggest that the writers actively reflect, possibly struggling with decision-making, guilt, or philosophical reasoning. These notes often read like inner debates or justifications, indicating that the suicide is not impulsive but deliberated. The analytic scores support this. Note 4, for instance, has the highest analytic score (15.41) and high cognitive process usage (12.35%), reinforcing the idea of a well-structured, highly reflective psychological state.

The authenticity score adds another layer to this profile. Most notes show high authenticity (above 80), implying emotional honesty and openness. However, note 5, despite its high cognitive engagement and emotional tone, has an unusually low authenticity score (23.45%). This suggests that the writer may be concealing more profound truths, masking pain, or using language in a

stylized, detached way. This disconnection between content and emotional transparency may indicate internal conflict, emotional control, or fear of vulnerability, even in a final message.

By synthesizing all these dimensions, we can see that each suicide note represents a unique linguistic profile. Some notes, like notes 1 and 2, display low analytic and high emotional markers, possibly indicating impulsivity or emotional overwhelm. Others, like note 4 and note 5, show high cognitive engagement and structural clarity, reflecting long-term psychological struggle or resignation. The interplay between these markers allows us to build rich, multidimensional profiles of the psychological states behind each note.

Thus, the emotional and cognitive linguistic patterns revealed through LIWC map the language used and mirror the writer's mind at a deeply personal moment. This forensic linguistic profiling transforms suicide notes into more than just final statements; they become textual representations of a person's mental state, offering insights that are invaluable to forensic analysts, psychologists, and suicide prevention researchers.

Conclusion

This study investigates the emotional and cognitive markers in suicide notes through forensic linguistic profiling using the LIWC tool. The analysis reveals that suicide notes are not merely emotional expressions but are deeply structured linguistic reflections of the writer's psychological state. Frequent first-person pronouns indicate intense self-focus, while high cognitive process scores suggest reflective or conflicted thinking. Low analytic thinking often corresponds with emotional overwhelm. Each suicide note displays a distinct linguistic profile, shaped by the writer's internal experience and emotional regulation at the time of writing.

The findings demonstrate how forensic linguistic tools like LIWC can extract meaningful psychological cues from language, offering insights for both legal investigations and suicide prevention efforts. By converting subjective emotional experiences into measurable linguistic data, the study provides a foundation for understanding the mental state of suicide victims through their words. This approach can assist professionals in identifying warning signs and contribute to the growing application of linguistic analysis in forensic and psychological domains.

References

- Ali, A., David, M. K., & Shah, S. A. (2022). Investigating lawyers' perceptions of forensic linguistics in Pakistan's Sindh Province: A way towards collaboration. *Journal of Indonesian Community for Forensic Linguistics*, 1(1), 1–13.
- Atif, M., Rashid, A., Arslan, M. F., Ullah, F., Amjad, M., & Haroon, H. (2024). A Phonetic Forensic Analysis of Imran Khan's Speeches. *Kurdish Studies*, 12(4), 720-732.
- Amalia, K. D., Putri, A. A., Yasmin, Z. K., Lubis, H. S. R. R., & Rangkuti, R. (2024). Forensic stylistic analysis in a pragmatic approach to an Indian teenage girl's suicide note. *Humanitatis: Journal of Language and Literature*, 10(2), 419–430.
- Ariani, M. G., Sajedi, F., & Sajedi, M. (2014). Forensic linguistics: A brief overview of the key elements. *Procedia - Social and Behavioral Sciences*, 158, 222–225.
- Argaman, O. (2010). Linguistic markers and emotional intensity. *Journal of Psycholinguistic Research*, 39, 89–99.
- Broome, L. J., Izura, C., & Davies, J. (2020). A psycho-linguistic profile of online grooming conversations: A comparative study of prison and police staff considerations. *Child Abuse & Neglect*, 109, 104647.
- Coulthard, M., Johnson, A., & Wright, D. (2016). *An introduction to forensic linguistics: Language in evidence*. Routledge.

- Fata, I. A., Yusuf, Y. Q., Kamal, R., & Namaziandost, E. (2021). The characteristics of linguistic features enfolded in suicide notes. *Journal of Language and Linguistic Studies*, 17(2), 720–735.
- Fernández-Cabana, M., Ceballos-Espinoza, F., Mateos, R., Alves-Pérez, M. T., & García-Caballero, A. A. (2015). Suicide notes: Clinical and linguistic analysis from the perspective of the interpersonal theory of suicide. *The European Journal of Psychiatry*, 29(4), 293–308.
- Fernández-Cabana, M., Jiménez-Félix, J., Alves-Pérez, M. T., Mateos, R., Gómez-Reino Rodríguez, I., & García-Caballero, A. (2015). Linguistic analysis of suicide notes in Spain. *The European Journal of Psychiatry*, 29(2), 145–155.
- Hameed, A., Naseem, M., & Dar, Z. (2025). Original and modified text in the crime investigation system of Pakistan: A critical forensic linguistic analysis. *The Journal of Research Review*, 2(02), 112–132.
- Handelman, J. M., & Lester, W. M. (2007). *Narrative dynamics in social marketing: The power of storytelling in campaign strategy*. *Journal of Public Policy & Marketing*, 26(2), 160–172. <https://doi.org/10.1509/jppm.26.2.160>
- Jasim, H. A., & Jaafar, E. A. (2022). Studies on linguistic stylistic analysis of suicide notes and suicidal thoughts posts. *International Journal of Research in Social Sciences & Humanities*, 12(1), 100–124.
- Pastika, I. W., Widiatmika, P. W., & Triadnyani, I. G. A. A. M. (2025). Linguistic markers in cross-nation suicide notes and their implications for authenticity verification. *Indonesian Journal of Applied Linguistics*, 15(1), 59–73.
- Rubab, I., & Ashfaq, S. (2024). Genre analysis of suicide notes in Pakistani TV dramas: Unraveling rhetorical patterns and communicative intentions. *International Journal of Academic Research for Humanities*, 4(1), 11–18.
- Sagheer, I., Fatima, S., Sarwer, S., & Rasool, S. A. (2024). A forensic linguistic analysis of crime language used in the headlines of the newspaper “The News International.” *Jahan-e-Tahqeeq*, 7(1), 757–766.
- Santoso, D. (2020). A forensic linguistics study of Ahok’s statements in psychological variables use computerized text analysis. *TEST: Engineering & Management*, 83, 11485–11494.
- Sayyed, M. (2024). Psychological implications of linguistics choices used to portray crimes in print media: A corpus-assisted discourse analysis of crime reports from Islamabad and Rawalpindi published in The Dawn and The Express Tribune. *Migration Letters*, 21(S8), 1119–1132.
- Sudjana, E. T., & Fitri, N. (2013). Kurt Cobain’s suicide note case: Forensic linguistic profiling analysis.
- Shahid, S., Shaukat, R., Arslan, M. F., & Kanwal, T. (2024). Bail applications and writ petitions as a distinct genre of legalese: A comparative forensic analysis. *Journal of Asian Development Studies*, 14(2), 250–268.
- Tanveer, S., Shakeel, Z., & Arslan, M. F. (2024). Navigating the complexity: forensic analysis of likelihood of confusion in pakistani local trademarks. *International journal of contemporary issues in social sciences*, 3(2).
- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24–54.