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Mapping Truth and Lies: A Forensic Linguistic Analysis of Verbal and Non-Verbal Cues in Student Interviews

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ABSTRACT

This study is the preliminary stage of a series of research projects attempting to develop a lie detection model in student interviews using a forensic linguistic approach. In this study, researchers focused on the differences between truth-telling and lying, as seen from the discourse and non-verbal cues. The data were taken from audio and video recordings of interviews with 20 students who were asked to draw two types of lots. The first draw required the students to either (1) take the envelope and the money inside it or (2) leave the envelope. The second draw required the students to either (1) tell the truth or (2) tell lies during the entire interview session. They were not allowed to show their draw results to anyone, until the end of the interview sessions. The researchers then analysed the discourse and non-verbal cues of the interview results. The theoretical framework used includes the Discourse Open-ness Theory (Fraser, 1990) to analyse the use of discourse markers that provide clues related to honesty or deception in conversation. The Illusion of Honesty Theory (Ekman, 2001) identifies non-verbal cues such as eye contact, gestures, and postures that are often associated with lying. Vrij's Deception Theory (2008) introduces language strategies commonly used in lying and supports a deeper analysis of the verbal and non-verbal elements found in dishonest interactions. A forensic linguistic approach (Coulthard & Johnson, 2007) is applied to examine sentence structures and other linguistic features that often emerge in deceptive communication. The results of this study show that inconsistent answers, evasions, short and less detailed responses, longer response times, minimal eye contact, rigid or frequently shifting body positions, and nervous smiles are all indications of lies. In contrast, detailed, longer, and consistent responses, direct eye contact, and relaxed posture indicate truth-telling.

Keywords: Forensic Linguistics, Interviews, Lies, Truth

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INTRODUCTION

Lies and deceptions are significant topics in the field of forensic linguistics. Although the terms are often used interchangeably, they differ in both concept and implication. Lies are typically expressed as false statements, intentionally made to mislead or deceive someone. Lies are told by individuals who are fully aware that the information they are conveying is false, but they deliberately present it anyway to make the listener believe the false information (Vrij et al., 2010). The act of lying is usually direct and straightforward. Therefore, it provides identifiable linguistic markers such as inconsistencies and contradictions. Lies can be categorised into two types, namely selfish lies and altruistic lies. Selfish lies benefit only the speaker and harm others, while altruistic lies benefit others and may harm the speaker (Gneezy, 2005) .

On the other hand, deception has a broader context, encompassing various ways of misleading others. While deception can involve lying, it may also include more complex communication strategies and subtle acts such as withholding information, misleading listeners with ambiguous statements, or manipulating fact conveyance to induce misunderstanding (Shu et al., 2013). Unlike lies, deception is not always about conveying false information; it can involve several tactics, such as:

a. Detail omission: intentionally omitting key details to lead others to draw incorrect conclusions.
b. Diversion: diverting the listener's focus using irrelevant information or tangential information.
c. Exaggeration: providing information while overstating its significance or downplaying its drawbacks without explicitly lying.

It can be concluded that a lie is a specific form of verbal deception. Other forms of deception, such as non-verbal cues and detail omission, can also be misleading, but they are often more challenging to detect, as they do not involve a direct falsehood (Ekman, 1992).

This study aims to identify indicators of deception through a linguistic approach, with a specific emphasis on discourse analysis and non-verbal cues. While much of the existing research on deception detection relies heavily on physiological and behavioral indicators—such as heart rate, skin conductivity, facial expressions, and body language—recent studies have shown that language use can also serve as a powerful tool in revealing deceit (DePaulo et al., 2003; Vrij, 2008).

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The primary data in this study consist of interviews with university students. By examining their verbal responses and accompanying non-verbal behaviors, this research seeks to uncover patterns that differentiate truthful from deceptive communication. The research questions addressed in this study are as follows: (1) What discourse features—such as lexical choice, coherence, self-reference, and speech patterns—indicate deception in interview responses; (2) How do non-verbal behaviors—such as gestures, facial expressions, and eye movements—correlate with deceptive intent?

a. Problem-Solving Approach

This study adopts a forensic linguistic approach, combining qualitative and quantitative methods to analyze deceptive discourse and non-verbal behavior. The main data will come from recorded interviews with university students, which will be transcribed and annotated for discourse features such as linguistic inconsistencies, repetition, avoidance of detail, and lack of coherence.

Additionally, non-verbal behaviors—such as fidgeting, gaze aversion, facial micro expressions, and body posture—will be observed and coded as part of the multimodal analysis. These cues serve as complementary indicators of cognitive load and emotional leakage that often accompany attempts to deceive (Ekman, 2009; Burgoon et al., 1996).

This multifaceted framework is expected to yield a deeper and more culturally grounded understanding of how deception is manifested in Indonesian communication contexts.

b. State of the art and novelty

Research in deception detection has traditionally centered on physiological or behavioral cues (Vrij, 2008). However, the linguistic dimension of lying is receiving growing attention. DePaulo et al. (2003) found that liars often use fewer self-references, include less detail, and exhibit greater disfluency than truth-tellers. Their speech is also less coherent and more likely to involve qualifiers or vague expressions, suggesting efforts to distance themselves from the lie.

In forensic discourse analysis, indicators such as inconsistency, topic shifts, and speech repairs have also been identified as linguistic signals of deception (Coulthard & Johnson, 2010). These features often stem from the cognitive effort required to construct and maintain a false narrative. While much of this research has been conducted in Western contexts, there is a

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noticeable gap when it comes to understanding deception in non-Western or multilingual societies such as Indonesia non-verbal behaviour, for instance, may be interpreted differently across cultures, and discourse patterns can vary significantly depending on cultural norms around politeness, indirectness, and authority (Triandis, 1995). Therefore, this study not only seeks to build on existing findings but also to contribute original insights by focusing on deception indicators in Indonesian discourse.

METHOD

This research employed a qualitative descriptive method, with primary data consisting of student interview sessions. In this study, 20 students were randomly selected. Prior to each session, participants were instructed to draw from two separate boxes. The first draw determined whether they should take and open a sealed envelope containing 300 thousand rupiahs or leave it unopened. This data collection technique is modified from a previous study by Santoso (2024), which also used an envelope containing three hundred thousand rupiahs. However, there are several significant differences, particularly in the sampling method and data analysis. Santoso selected three students and placed the envelope in the campus parking lot, then "interrogated" the students and analysed the data in terms of suprasegmental features (frequency, intonation, and duration). However, this study used a draw system where the students had to participate in two drawing sessions. The second draw assigned their response condition, indicating whether they were to respond truthfully or fabricate an answer during the interview. Participants were instructed to keep the results of both draws confidential and not to disclose them to either their peers or the interviewer until the final disclosure session.

During the interview, the researcher recorded the participants using both audio and video recorders. The participants were then asked to answer a series of questions, and their responses were expected to align with the result of their draw. Among the 20 participants, 10 were instructed to tell the truth, while the other 10 were asked to fabricate lies. The researchers who conducted the interviews did not know the outcome of the participants' draw; therefore, they could only determine whether the participants were lying or telling the truth during the disclosure session, in which the participants revealed their draw results and triangulation was conducted. The interviews were designed to be semi-structured, using

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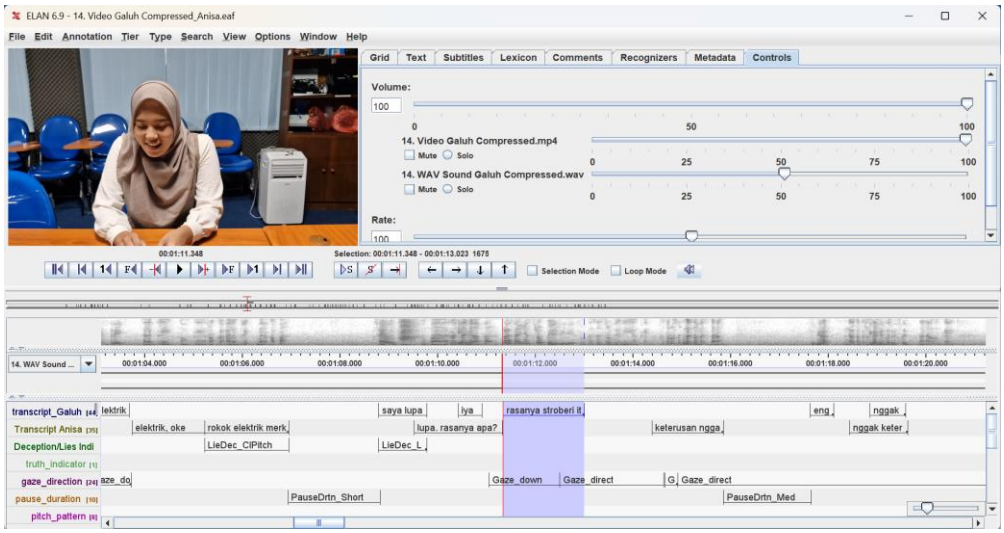
open-ended questions to encourage natural responses. Picture 1. shows the drawing session and interview session during the data collection process.

Picture 1.
Drawing and Interview Process

The video and audio recording were then segmented and codified using ELAN and Praat Software. ELAN helps the researchers to transcribe and codify the video data, while Praat enables the researchers to analyse the prosodic features of the data further. To codify the data, the researchers set 4 Types in ELAN i.e. Transcriptions, Prosody, Discourse, and Non-Verbal. Tiers were set for each Type to codify the data more clearly. The data codification process in ELAN is illustrated in Picture 2. All the codified data were then exported into Excel format to be counted and further analysed.

Picture 2.
Data Segmentation and Codification Using ELAN Software



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FINDINGS AND DISCUSSION

This study aims to map verbal and nonverbal indicators in distinguishing truthful statements from false statements. Based on two types of data analysis—nonverbal and discourse types—significant patterns of differences between honest statements and false statements are observed.

a. Verbal Indicators / Discourse Type

Under the Discourse Type, the researcher sets several Tiers with certain controlled vocabularies. For example, under the Lie or Deception Indicators, several controlled vocabularies are used, including Change in Pitch, Lost Memory, Undetailed Statements, and Over-Explanation. The results of Discourse Type codification in Elan can be seen in Table 1.

Table 1:
Total of Discourse Type

No.	Tiers & Controlled Vocabularies	Truth Statement	%	Lie/Deceptive Statement	%
1	High Certainty Level	245	63%	143	37%
2	Low Certainty level	54	42%	75	58%
3	Uncertain	30	41%	43	59%
4	Fillers disfluency (hmm, ngg, etc.)	50	29%	123	71%
5	Fillers repairs	13	19%	56	81%
6	Hedging	0	0%	23	100%
7	Lie/ Deception Indicator: Change in Pitch	15	25%	45	75%
8	Lie/ Deception Indicator: Lost Memory	0	0%	30	100%
9	Lie/ Deception: Undetailed statements	23	18%	108	82%
10	Lie/ Deception: Over explanation	3	100%	0	0%
11	Lie/ Deception: Evation	0	0%	0	0%
12	Truth Indicator: Coherence	50	91%	5	9%
13	Truth Indicator: Direct Answer	243	54%	208	46%
14	Truth Indicator: Spontaneous Anwer	263	70%	115	30%
15	Truth Indicator: Consistent Answer	235	63%	138	37%

In the discourse aspect, "Fillers disfluency" (hmm, ngg, etc.) and "Fillers repairs" appear more often in lies (71% and 81%). The same thing happens with expressions of uncertainty ("Uncertain" and "Low Certainty level"), which dominate in lies (59% and 58%, respectively). Hedging, as a form of avoiding commitment, appears 100% in lies. Other indicators of deception, such as "Change in Pitch" (75%), "Lost Memory" (100%), and "Lack of Detail" (82%), also reflect typical characteristics of lying.

Interestingly, "Over-explanation" was found exclusively in truthful statements, which contradicts the common assumption that excessive

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elaboration signals deceit. This may be attributed to the conversational context, which allowed honest participants to offer more details as a means of clarification. In contrast, when students were lying, they tended to give brief responses to each question. This strategy was employed to avoid follow-up questions, as longer answers would require additional cognitive effort to maintain plausibility. The short responses also reflect their attempt to avoid fabricating extended narratives that might otherwise compromise their credibility. In addition, "Direct Answers"—often considered an indicator of truth—appeared at a high rate in both truthful and deceptive statements (54% and 46%, respectively), while "Evasion" did not appear at all in the data. This may be due to the nature of the interaction, which consisted of question-and-answer sessions rather than open narrative discourse. The students were fully aware that, even when lying, there would be no serious consequences for them. As a result, they tended to give direct and concise answers and did not attempt to evade any questions.

For example, when asked “Do you smoke?”, participants who were lying mostly responded with a simple “Yes” or “No.” Similarly, when asked “Do you mind if I check the CCTV to make sure whether you took the envelope?”, most responded with “No.” This pattern might differ in contexts involving rewards and punishments, or in high-stakes situations such as police interrogations, where every utterance may have legal implications.

In contrast, truth indicators such as "Coherence" (91%), "Spontaneous Answer" (70%), and "Consistent Answer" (63%) appear predominantly in honest statements. This is in line with the findings of Rubin and Conroy (2012), who emphasize the importance of consistency and spontaneity as indicators of honesty.

b. Nonverbal Indicators

This study presents a comparative analysis of 15 nonverbal behavioral indicators across truthful and deceptive statements. The behaviors examined include body posture, facial expressions, gaze direction, and hand movements. The findings provide empirical support for several established theories in the domain of deception detection.

Eye movement patterns also show differences: gaze to the upper left (69%) is more dominant in lies, while gaze to the upper right (57%) and direct gaze (60–65%) are more frequent in truths. Previous research has suggested that gaze orientation may indicate access to visual memory or imaginative constructions (Ekman, 2009), although this is still controversial.

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Results indicate that "leaning back" is overwhelmingly associated with deception (92%) compared to truth-telling (8%). Conversely, "leaning forward" appears more frequently in truthful statements (55%). This aligns with previous findings that associate physical distancing (e.g., leaning back) with psychological distancing during deception (Vrij, 2008).

Similarly, "shifting posture" is more prevalent during deceptive statements (74%) than during truthful ones (26%), suggesting increased discomfort or cognitive load (Zuckerman et al., 1981). In contrast, being still correlates more with truthful statements (73%), possibly due to increased self-confidence or reduced anxiety.

Deceptive statements frequently involve "nervous laughter" (88%) and "nervous smiling" (82%), behaviors often linked to attempts to mask internal tension or anxiety (Ekman & Friesen, 1974). The low occurrence of these expressions during truthful statements (12% and 18% respectively) supports their diagnostic value in lie detection.

Eye gaze direction also yields significant differences. "Gaze to the upper left"—which some researchers associate with constructive visual imagery (often linked to fabrication)—appears in 69% of deceptive responses. Conversely, "gaze to the upper right" (typically associated with recalling actual memories) is more common in truthful responses (57%). While popular culture emphasizes such gaze theories, empirical support is mixed (Wiseman, Watt, ten Brinke, Porter, Couper, & Rankin, 2012). Nonetheless, direct gaze shows a strong association with truthfulness (65%) and a lower correlation with deception (35%), supporting its role as a cue of sincerity and confidence.

Interestingly, "gaze downward" and "gaze to the left" were more frequent in deceptive responses (68% and 61%, respectively), potentially reflecting shame, guilt, or cognitive effort in fabricating stories (DePaulo et al., 2003).

Hand movements toward the mouth (76%) and nose (90%) are substantially more frequent in deceptive responses. These self-directed gestures are often interpreted as pacifying behaviors or stress regulators, frequently associated with cognitive dissonance during lying (Ekman, 2009). The relative rarity of these behaviors during truthful statements (24% and 10%) further underscores their diagnostic utility.

Table 2:
Total of Non-Verbal Type

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No.	Tiers & Controlled Vocabularies	Truth Statement	%	Lie/Deceptive Statement	%
1	Lean Back	5	8%	57	92%
2	Lean Forward	65	55%	53	45%
3	Shifting Posture	36	26%	103	74%
4	Still	123	73%	45	27%
5	Nervous Laugh	5	12%	36	88%
6	Nervous Smile	10	18%	47	82%
7	Gaze: Upper Left	98	31%	221	69%
8	Gaze: Upper Right	113	57%	86	43%
9	Gaze: Direct	421	60%	281	40%
10	Gaze: Down	97	32%	203	68%
11	Gaze: Left Side	124	39%	198	61%
12	Gaze: Rigth Side	143	58%	102	42%
13	Gaze: Direct	432	65%	231	35%
14	Hands toward Mouth	8	24%	25	76%
15	Hands toward Nose	2	10%	18	90%

The combination of verbal and nonverbal data enables a more comprehensive understanding of the characteristics of lies and honesty. This finding has significant potential in the fields of forensic linguistics, investigative conversation analysis, and the development of AI-based lie detection technology.

However, these results also show that no single indicator is completely reliable. Therefore, multimodal analysis is needed. In line with the research of DePaulo et al. (2003), the combination of nonverbal behavior, prosody, and verbal content is more effective in identifying lies.

CONCLUSION

This study explores the linguistic and non-verbal markers of deception through a forensic linguistic lens, focusing on student interviews. The analysis reveals that lies are frequently marked by hedging, disfluencies, reduced detail, lost memory, and indirectness in verbal responses. Non-verbal behaviors such as nervous laughter, gaze aversion, posture shifts, and self-directed gestures (e.g., touching the nose or mouth) are also strongly correlated with deceptive responses.

In contrast, truthful statements are characterized by coherence, consistency, spontaneous elaboration, direct eye contact, and a calm demeanor. These findings reinforce existing theories on deception, including those by Ekman (2001), Vrij (2008), and DePaulo et al. (2003), while adding culturally contextualized insights from an Indonesian setting.

Importantly, no single indicator—verbal or non-verbal—proved

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sufficient in isolation to definitively distinguish truth from lies. Instead, a multimodal analysis that integrates discourse patterns with behavioral cues provides a more reliable method for detecting deception. The findings contribute to the growing field of forensic linguistics and can inform future research and applications, including interview techniques, legal investigations, and AI-based deception detection tools.

Future studies are encouraged to incorporate prosodic features—such as pitch variation, speech rate, pauses, and intonation patterns—as part of the analysis. Prosody can offer valuable insights into the speaker's emotional state and cognitive load, which are often subtly reflected in the rhythm and tone of speech. The integration of prosodic analysis with verbal and non-verbal cues would enrich the multimodal framework and improve the precision of deception detection models. Additionally, comparative studies across cultures and languages may reveal how prosodic markers of deception vary in different sociolinguistic contexts.

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