
| RESEARCH ARTICLE

Language and the Law: Investigating Linguistic Evidence in Jordanian Courts

Majdi Alkhalayleh¹✉, Mohammed Nofal² and Wajed Al Ahmad³

¹Department of English Language and Literature, Middle East University, Amman, Jordan

²Assistant Professor of Linguistics, Faculty of Language Studies, Arab Open University, Kuwait

³Department of English Language and Literature, Al-Balqa Applied University, Salt, Jordan

Corresponding Author: Majdi Alkhalayleh, **E-mail:** majde1987alkhalayleh@gmail.com

| ABSTRACT

The intersection between language and the law has been attracting much attention in recent years. Yet, this intertwined relationship is still glossed over in several regions including the Arab world (Rosenhouse, 2013). Drawing upon data from audio-recorded semi-structured interviews with 34 participants specialized in the fields of law and linguistics, this study delves into the mechanism used in the investigation and proof of linguistic evidence in Jordanian courts, and how language-related cases are handled in the Jordanian courts. The sample of the study was comprised of judges (n= 6), public prosecutors (n= 5), lawyers (n= 6), investigation police officers (n= 5), handwriting analysis experts (n= 6), speaker recognition experts (n= 2), law academics (n= 2) and linguists (n= 2). The collected qualitative data were transcribed and analyzed adopting Braun and Clarke's (2006) six-stage thematic analysis. The results showed that written and spoken linguistic evidence is examined and analyzed by experts who have no knowledge of linguistics. They cannot provide cogent reports based on convincing and accepted linguistic principles, which leads to a weakening of the argument of linguistic evidence.

| KEYWORDS

Forensic linguistics, Jordan, Law, Legal language, Linguistic evidence

| ARTICLE INFORMATION

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1. Introduction

Forensic linguistics, a specialized field that intersects language and law, has become an essential tool in the pursuit of justice across legal systems worldwide (Coulthard et al., 2017; Olsson, 2020). This discipline employs linguistic analysis to address various issues in criminal and civil cases, ranging from disputed authorship to the interpretation of ambiguous legal texts. By examining language patterns and structures, forensic linguistics offers insights that assist in understanding and resolving legal conflicts. Within this context, authorship identification has gained particular importance, as it reveals or validates the origins of key textual and verbal evidence (Turell, 2021).

In Jordan, forensic linguistics is an emerging area of interest among linguists. Although the application of linguistic analysis in legal settings is relatively new to the region, it has begun to demonstrate its value, especially in cases involving contested written and spoken evidence. Jordanian courts increasingly encounter cases involving anonymous letters, text messages, recorded conversations, and witness statements where authorship identification is crucial for determining culpability or supporting a defense.

A focal point of this study is authorship identification, a forensic process dedicated to determining the writer or speaker of a disputed or anonymous text or utterance. This process plays a critical role in the Jordanian courts by assisting in attributing authorship when the identity behind a text or speech remains unclear. By employing linguistic profiling and stylometric analysis, authorship identification techniques provide an empirical approach to matching written and spoken evidence with potential authors or speakers, delivering an additional layer of evidence that is both objective and analytical.

This article problematizes the procedures followed by the judicial system in Jordan in relation to dealing with language related issues. Thus, it seeks to investigate the mechanisms used by Jordanian courts to analyze linguistic evidence, with a specific focus on authorship identification. To achieve this objective, the following research question guides the study:

What is the mechanism used in Jordanian courts to investigate and prove linguistic evidence, and how are language-related cases handled?

The current study contributes to the current human knowledge of the interaction between language and the law, both methodologically and theoretically. The methodological contribution lies both in its qualitative nature in terms of data collection and analysis. The qualitative data were collected from a specialized group of participants who work in the field of forensic investigation, adopting Talmy's (2010) approach to constructing interviews as social encounters rather than reporting data. Also, the data were analyzed adopting Braun and Clarke's (2006) six-stage thematic analysis. The theoretical contribution of this study is reflected in the fact that it focuses on an under-researched context in the field of forensic linguistics (Rosenhouse, 2013). This study is one of the first studies that shed light on the forensic procedures in the Jordanian judicial system with regard to language evidence.

2. Literature Review

2.1 Review of theoretical literature

Investigative forensic linguistics is one of the branches of forensic linguistics due to its ability to handle most of the written or spoken linguistic evidence associated with a very large number of cases that are investigated daily in courts (Coulthard & Johnson, 2010). The challenge is that investigative work can be extremely varied, and each case may require developing its own methodological approach (Perkins & Grant, 2013).

Comparative authorship analysis emerged as one of the most well-known and methodologically interesting areas of investigative forensic linguistics that deals with what so-called "anonymous texts", such as terrorist conspiracy communication, extortion letters, a statement alleging sexual harassment, witness statements, fake emergency calls, forged Will, incitement letters, e-mail threats, suicide letters and ransom notes; such cases typically include anonymous/disputed text(s) and a set of undisputed texts (belonging to the accused/ suspect and known to the court) for comparative intents. The aim is to determine whether the disputed or anonymous text(s) could have been written/ spoken by the author of undisputed texts; the same method is applied in case there is more than one suspect. Sole-authored undisputed texts would be compared to the disputed text(s) (Tkacukova, 2019, p. 191).

Suicide Letters as an example have special features by which a forensic linguist can determine whether the suicide himself wrote the letter or not. Suicide letters should include the following: an unambiguous message, addressed to the addressee and related to the writer's relationship with the addressee, clear that it is not the best behavioral action but the only behavioral action he has, and short (less than 300 words). In contract disputes, the meaning of individual words and phrases (as well as syntactic relations) can form issues of contention. In plagiarism cases, which are a subset of authorship analyses, the question is whether the text or content was lifted by an accused from an author's or company's document (e.g., a novel, judicial opinion, screenplay, or patent application) onto another document without proper citation and passed off as the accused's own. In trademark litigation, linguists are also called in to testify on the likelihood of confusion in relation to sight, sound and, meaning and the strength of the mark (Butters, 2010, p353).

In copyright cases, the linguistic issues can include not only straightforward borrowing of words but also copied discourse structure such as topic sequencing. In a related area of the law, trademark infringement cases regularly turn on linguistic similarities between a junior and a senior trademark (e.g., phonological analysis can demonstrate whether they sound similar, and semantic and pragmatic analysis can elucidate whether their meanings are similar. Even in cases of product liability, linguists can offer important testimony, for example, showing that the product had an insufficient, incomprehensible, or unreadable warning label). Shuy (1990) has demonstrated in several cases that while the usage instructions on a product were written clearly and precisely, the warning sections were imprecise, unclear, and ambiguous. Other types of cases in which linguistic analysis can be pivotal are discrimination and defamation cases, where a defendant's language use can be subjected to scrutiny, for example, regarding its meaning in context.

Regarding emergency calls, Olsson (2009) points out that emergency calls are one of the most frequently handled judicial texts, and determining whether they are true or fake is very important. Although it is difficult to determine this, a skilled forensic linguist has the ability to distinguish the difference between true and fake calls by studying and identifying some prominent features such as urgency, stuttering, incomplete answers, evasion of the answer, which often indicates an error, repetition of certain words, rising pitch, emphasis.

On the other hand, many cases containing spoken linguistic evidence are constantly brought to the criminal and civil courts. In fact spoken speech is considered as the origin of language, and people prefer it as a way of communicating with others to express their thoughts and feelings faster and clearer than written speech. When talking about identifying the speaker by applying comparative analysis, we find that spoken speech shows more similarities and differences related to the linguistic features of the speaker's speech in the disputed text and the suspect's speech in the undisputed text than written speech (Hollien, 1990).

Semantic variation can also be examined more clearly in spoken texts than in written texts by testing idiolect and sociolect hypotheses. By applying the theory of idiolect, it is possible to identify similarities between individual linguistic features that combine the use of language, the manner of speech of the author of the text with the use of language and the manner of speech of the suspect. In addition, sociolect theory can be applied to identify group-dependent similarities in language use, in addition to distinguishing phonological differences in dialects that distinguish a person geographically or socially through spoken speech more than written speech. The task of identifying the author of the spoken text is the responsibility of a speaker recognition expert, which in forensic linguistics is called a forensic phonetician. In this context, Olsson (2004) stressed that the forensic phonetician should have comprehensive phonological knowledge of how and where speech sounds are made. Therefore, the theory and organization in phonetics are indispensable.

Hänlein (1998) uses the authorship recognition method - a corpus-based Approach - by analysing the individual's style, emphasizing that "style is the dress of thoughts". For Hänlein, style is essentially a choice, but the choice is variable. She asserts on the rule that if the choice is repetitive, it is considered a prominent feature of the individual's style. This is called "stylistic fingerprint", the trace of which is sought only through close reading. Hänlein focuses on three main entrances in her search for style signs: 1. Word-frequency. 2. Keywords. 3. Proper names.

With the coming of university education, the internet, and technological development, speakers of the same language have begun to use the language similarly in the way they speak or write. He also adds that constant language communication across cultural and national borders has a homogeneous effect on the language, so some of us become like each other in the way we use language to communicate. This brings us to a stage called "linguistic homogenization", thus contributing to the reduction of the so-called "linguistic individuality" (Nini, 2023). So, evidence to support the belief that individuals possess a unique linguistic style requires precise examination by a competent forensic linguist with comprehensive linguistic knowledge based on theoretical scientific foundations that are empirically applicable through the ability to create and prove a hypothesis.

2.2 Empirical studies

There is a linguistic rule asserting that every native speaker has an idiolect and uses language in unique and distinct ways (Tkacukova, 2019, p. 192). From this point, forensic linguists have worked with "the assumption that idiolect will manifest itself through distinctive and idiosyncratic choices in speech and writing" (Coulthard & Johnson, 2007, p. 161).

In investigative forensic linguistics, there are two main approaches, each based on a different linguistic theory of the idiolect concept. The first approach emanates from the cognitive theory of idiolect, which is based on objective quantitatively measurable aspects of an individual's cognitive capacity (Grant, 2010, p. 510), such as content analysis, readability measures, vocabulary richness, repetition of lexical-grammatical features, syntactic and sentential complexity, use of punctuation and errors in punctuation, word frequency, misspellings, grammar, or word forms (Chaski, 2001, p. 1).

The following example shows how the forensic linguist applied the principles of the cognitive theory of idiolect: The dog club treasure case. In the American Midwest, a dog club committee chairman received a series of aggressive anonymous letters. What is useful about this case is that it gives us an opportunity to understand the individual's cognitive capacity. One of the prominent individual features, in this case, is the author's use of grammar and spelling, the forensic linguist found that the author uses the word "Apologies" instead of "apologizes", in addition to confusing "Been" and "Being", and misspelling the preposition "To" instead of the adverb "Too". For using punctuation marks, it was found that the author uses redundant punctuation marks that were placed at random. The forensic linguist also found that the author uses constant capitalization. A distinctive feature of the author is also his use of date, leaving a blank in the first line, and the closing greeting. All these prominent individual features of the author enabled the forensic linguist to identify and compare the disputed texts with the way the language was used by the club members, as it later turned out to be completely identical to the way the dog club treasurer wrote, who later admitted that he was the author of those aggressive letters.

The second approach emanates from the stylistic theory of idiolect, which is more qualitative in its essence and more suitable for shorter texts. It provides an explanation about why and how the language of individuals varies. Grant (2010) notes that our linguistic experiences help us develop distinctive features in our language use. The idiolect stylistic approach does not deal with commonly pre-determined features; it becomes the task of the forensic linguist to determine distinctive features upon the qualitative investigation of the texts, which makes this approach more suitable for shorter texts.

The following example shows how the forensic linguist applied the principles of the stylistic theory of idiolect: The Barrel Killer. This case happened in Yorkshire in the UK in 2005 when a forty-year-old woman named Julie Turner went missing. While searching for her, her partner, Darren, received two phone messages sent by the killer to mislead the fact that she was killed, so that her partner would think that she had escaped. After investigating Simmerson, a man she had been having an affair with for 4 years. The forensic linguist found that his use of language and his lexical choices were unique and had distinguished prominent features, which were completely identical to the language used in the two mobile phone messages.

The forensic linguist came to this conclusion after comparing the written mobile phone messages with Simmerson's recorded spoken statement. Where the repetition of the word "Sort" caught his attention as he found that it had been repeated in several places through unusual phrases such as "head sorted out" and "sorted her life out". Relying on Hänlein's (1998) stylistic fingerprint role: "If the choice is repetitive, it is considered a prominent feature of the individual's style", the forensic linguist

reported back to the detectives and told them that there was a high probability that Mr. Simmerson was the author of the mobile phone messages. From this point, the investigation process began. The detectives monitored Simmerson and found evidence proving that he was the killer. Finally, he was convicted of Julie's murder.

Tkacukova (2019) refers to the following example of utilizing the principles of the stylistic theory of idiolect: The case of Jenny Nicholl. A nineteen-year-old teenager from Richmond in the UK, who disappeared in June 2005. In fact, she was murdered by her lover David Hodgson, who later sent four messages from her mobile phone to her family and friends during the period two weeks after her disappearance.

The forensic linguist Malcolm Coulthard was asked by the court to examine and analyse these four text messages which sent from Jenny's phone in addition to eleven text messages she sent previously and seven text messages sent by David Hodgson for comparative purposes. Coulthard analysed Jenny's and Hodgson's undisputed messages separately in order to identify a series of symmetrical and distinctive lexical choices for both (Grant, 2010, pp 515–517; Perkins & Grant, 2013). Jenny was more likely to use 'my' and 'myself' while Hodgson tended to use pronouns 'me' and 'meself' characteristic of North Yorkshire variety; Jenny used 'cu' for 'see you' whereas Hodgson used 'cya'; Jenny used 'im' whereas Hodgson used 'I am'; Jenny used 'am not' or 'I'm not' whereas Hodgson used 'aint'; Jenny used '2' for 'to' without space afterwards but Hodgson didn't use it at all.

Coulthard concluded through comparing these features helped that the text messages sent after Jenny's disappearance were consistent with Hodgson's style, but not compatible with Jenny's style (Grant, 2010, p 515). Although the body was never found, David Hodgson was convicted of murder based on such circumstantial evidence as car hire records, mobile company records and forensic linguistic evidence. Coulthard had a remarkable opportunity to present his report in the court with a PowerPoint presentation highlighting all the individual's prominent features in Jenny's texts and how they appeared in the suspect texts (Coulthard & Johnson, 2010). In this case, Coulthard did not only describe "consistent patterns" of written style within an author's text, but also attempted to account for the level of intra-author variance in writing style (Perkins & Grant, 2013), by highlighting the distinctions between the two authors in relation to the same features.

3. Methodology

3.1 Participants

The eligible population of the current study includes all legal professionals working within the framework of the Jordanian judicial system as follows: 1. Magistrates and judges who are responsible for hearing cases brought before the Jordanian courts, listening to witnesses, and having the authority to make decisions and issue judgments. 2. Prosecutors who are responsible for receiving complaints, investigating crimes, classifying evidence related to these cases, and requesting experts to examine and give opinions about this evidence. 3. Investigation police officers who are responsible for investigating crimes, collecting evidence related to these cases, identifying suspect(s) and accused(s), and interrogating them. 4. Lawyers working in Jordanian courts, from solicitors to senior barristers. 5. Experts chosen by Jordanian court to examine or analyze linguistic evidence including police or civilian handwriting analysis experts, and police or civilian speaker recognition experts. The eligible population of the current study also includes law academics and linguists interested in forensic linguistics, whose academic research overlaps within the circle that brings together language, law, and crime.

Due to the inability to gain access to all members of the population, a purposive sample has been selected for the purpose of the study. All the points discussed with the study sample were considered in order for the data collection process to be comprehensive, accurate, valid and highly reliable. Therefore, specific criteria were set through which the study sample was selected. The most important of which is the average age of experience of the participants to be at least fifteen years each according to their field of specialization, to benefit from their long-term experience in this field.

In addition, there was a diversity in the selection of the study sample in terms of age, educational qualification, geographical distribution, and place of work. The sample of the study comprised thirty-four participants who have extensive experience, including six judges, five public prosecutors, and six lawyers all of whom have comprehensive experience in various Jordanian courts. The study sample also included five investigation police officers, six handwriting analysis experts, two speaker recognition experts, two law academics and two linguistics academics.

3.2 Data collection

This study drew upon qualitative data which was collected by means of semi-structured interviews that were conducted during the period from May 2023 to August 2023. Semi-structured interviews gave the advantages of reliable, comparable data, and the flexibility to ask follow-up questions (Nofal, 2023). And it's worth noting that it was very important to reach details and richness by being, as researchers, as clear and concise as possible to achieve the objectives of the study.

Interview questions are designed and selected for compatibility according to the sequence of study questions. There are standard questions for all participants and specialized questions depending on the nature of the participants' work. All the sub-questions that were asked during the discussion about important points that need to be clarified, explained, or elaborated and that directly relate to the objectives of the study were also documented. The interviews were conducted face-to-face, in Arabic. Most of them were recorded and with an average length of 45 minutes.

The interviews were treated as an interactive meeting in order to reach a common ground in which both the researchers and the participant interact objectively and clearly without ambiguity or bias (Talmy, 2010; Nofal, 2020). This in turn enabled the researchers to (1) reflexively perceive that data was collaboratively produced (Talmy, 2010, p. 132), and (2) focus not only on the content but also on how it was shared.

Ethical considerations, positionality, reflexivity, research settings and procedures were taken into account at all stages of the research (Glesne, 2011). This included acknowledging not only the researcher's emotions and position but also his/her epistemological stance and his personal experience (Hennink et al., 2020). Thus, the researchers critically questioned his position, power relations, interpretations and decisions on an ongoing basis to minimize any subjective perspective, assumptions, or fixed understanding (Nofal, 2023).

Informed consent has been received from each interviewee prior to beginning the interviews in a (plain Arabic written format) to make clear the purpose of the study. The participants also reserved the right to request/ receive the study findings in the form of a thesis/ presentation/ publication towards the end of the research.

There are also other ethical considerations that have been taken into consideration such as confidentiality, anonymity, storage, access, use and disposal of data. As for confidentiality, the participants were informed that their personal details, as well as all the data to be collected, would not be shared with anyone else. In addition, the participants' data and personal details were stored in a secure place where no one can access it except the researchers. Anonymity and confidentiality of the data were given priority. The participants were informed that their real names would be replaced with numbered job titles, and that none of their personal details would be used so that no one could identify them from their details.

3.3 Data analysis

To achieve the objectives of the study, the collected data were analysed following Braun & Clarke's (2006) six-stage thematic analysis, which was adopted to identify the salient themes in the data as follows: 1. Familiarization step. After completing the interview phase, the researchers conducted re-reading to the data to take out necessary notes. After that, the researchers collected the preliminary results and reviewed them. The prose within the written texts was then examined again for familiarity and errors. During this phase the researchers also transcribed the audio recordings into analyzable texts. 2. Coding step. At this stage, the researchers identified common topics within the study and classified them through the distinctive color coding by classifying common and related phrases. 3. Constructing themes. At this stage, the labeled codes were combined into broader umbrella themes covering a wide range of recurring statements and opinions. The researchers concentrated on the themes that generally identify the recurring threads of thought that run through the responses to the same question. 4. Reviewing themes. At the end of the study, the researchers took a short introspective look at how exactly he classified what he found by comparing the fit and correlation of the labels with the themes. 5. Defining themes (Braun & Clarke, 2006, p. 87).

A second look at consistency and relevancy was taken by reviewing the names of categories and themes for clarity and accuracy. 6. Writing a thematic analysis. After all the data were processed and the classification and analysis were completed, the researchers presented the results and determined the methodology that shows how the data was collected and how the thematic analysis was performed. Conclusions were then drawn showing how the analysis answered the study questions and summarizing the main points.

4. Results

Before presenting the results, it is necessary to understand the sequence of actions that the Jordanian courts follow in the event of a complaint. If a person wants to file a complaint, he must submit it to the court through the prosecutor, and the complaint must be written in the form of a list that includes the name of the complainant, his address, the subject of the complaint, the name of the defendant, a brief of the complaint facts, the date of the offense, and the complainant signature. If the complainant has evidence indicating that the defendant committed the illegal act, he must attach it to the complaint list. We note from the above that the elements of the complaint list are completed if there is evidence directly related to the perpetrator and clearly proves his illegal act with no doubt.

If we assume that a person has received a threatening letter from a person known to him, we can say that the elements of the complaint are complete (the evidence is there and directly related to the perpetrator, who is already known, and the evidence clearly proves his illegal act). But if this threatening letter was anonymous, and the complainant was unable to identify who sent it. Or if we assume that there is a suspect within the circle of suspicion that he is the one who sent that threatening letter, but he denies doing so. Here the pillars of solving the case are incomplete, and the court needs to conduct a broader investigation to find out the author of the text or prove that the suspect is the author.

Through this assumption, the following central question was raised: *What is the mechanism used in Jordanian courts to investigate linguistic evidence, and how are language-related cases handled?* First of all, it should be noted that most of the participants in the study sample defined linguistic evidence as any text (written or spoken) in a certain language, which is used as evidence in courts and through which it is possible to find out the truth and convict the perpetrator of the crime. From this definition, the results related to the mechanism of investigation of linguistic evidence in Jordanian courts are sorted by the type of the linguistic evidence as follows:

4.1 Written linguistic evidence

To distinguish the written linguistic evidence, it was necessary to search for its definition through the participants. Most of the participants identified the written linguistic evidence with a definition similar to that of Prosecutor General number four, who defined it as: "a text composed of letters and meaningful words related to the case being investigated, and it would be a handwritten text, a text printed on a piece of paper, or any text written by an electronic device".

During the interviews, the participants noted that if the linguistic evidence is valuable in the case, and it needs to be examined and analyzed to identify its author or prove that a suspected person has written it, the judge asks for the opinion of those who have experience in this field through the testimony of a specialized expert to examine and analyze the evidence, then submits an experience report. Prosecutor General number Five mentioned that "the expert is requested based on the type of written linguistic evidence. If the linguistic evidence is handwritten or printed, the prosecutor requests a handwriting analysis expert. If the text was sent by electronic device, such as a mobile phone message or an e-mail, then this evidence is transferred to the Anti-Cybercrime Unit to investigate it and identify the author of the text". To find out the mechanism of action of the experts who are assigned to investigate this linguistic evidence, the written linguistic evidence has been divided into the following three types:

4.1.1 Handwritten linguistic texts

Based on the relevance of the handwritten linguistic evidence to the case, the prosecutor decides to use a handwriting expert to identify the author of the text. Hence the researchers asked the following specialist question to the handwriting analysis experts participating in the study sample: *What is the first action performed by the handwriting analysis expert when examining a handwritten linguistic text?* Handwriting analysis expert number one replied that "The initial procedure is to examine the document with its three parts (the body of the document, the content, and the written material), determine whether the author of the text is a native speaker of the written language or not, determine the nationality of the author of the text by determining his/her dialect, examine and analyze the written text by employing the principles of graphology such as (The type of written font, the method of writing, the form of writing letters, the analysis of hand pressure, the beginning and end of writing), the author's writing style, linguistic level, and spelling mistakes".

Handwriting analysis expert number two added, "The individual prominent features and distinctions of the author of the disputed text are then determined. After that, the focus is shifted to the suspect(s), the handwriting expert makes them write so that he can do the comparison process and determine the author of the text".

The participants noted that when the expert finishes the examination and analysis of the linguistic text, he prepares an experience report. The prosecutor makes an appointment for him to present his testimony to the judge and present his experience report in the presence of the accused and his lawyer. Here the researchers asked the following question: *Should the judge abide by the results of the expert's report that examined and analyzed the linguistic evidence, whether written or spoken, in terms of sentencing the accused or acquitting him?* Participants noted that the judge is not obliged to adhere to any report submitted by experts. For instance, Judge number three replied "Article 147/2 of the Jordanian code of Criminal Procedure No. 9 of 1961 and its amendments states that: "Evidence shall be presented in felonies, misdemeanors and violations by all means of proof and the judge shall rule according to his personal conviction". Judge number four added "the expert report is not obligatory for the judge, and in case the judge is not satisfied with the expert report, he has the right to request a second and third expert. In the end, the judge rules according to his personal contentment".

4.1.2 Linguistic texts printed on paper

Assuming that a ransom note printed on a piece of paper was found at a crime scene next to the body of a dead person, the first thing the prosecutor does is to request an expert from the forensic laboratory to identify any fingerprints marks. It is possible that in such cases the offender hides his fingerprints or the fingerprints themselves might be unclear for whatever reason. The researchers gave such a scenario to prosecutors to find out what actions they take in connection with such evidence. The Prosecutor Generals agreed that they would ask for a handwriting analysis expert to examine the printed text.

During the interviews conducted with handwriting experts, the interviewer asked them: *How does handwriting analysis expert examine and analyze the printed linguistic text?* The handwriting analysis expert number one answered "the expert conducts research on the following points, then highlight and analyze it: 1. The language used. 2. The author's style used in printing. 3. The author's linguistic prominent features. 5. Accent. 6. Spelling mistakes".

The handwriting analysis expert number three made an extremely important point by mentioning "during the analysis process, the focus on linguistic features is unfortunately limited, and therefore the results will not be as accurate as they must be. The reason for this, as mentioned earlier, is that handwriting analysis experts are not specialized in linguistics and do not have sufficient knowledge to enable them to analyze linguistic texts convincingly".

Based on these findings, the researchers found it important to measure the accuracy of the results presented by handwriting analysis experts when examining such evidence, and how convinced the judge and the other concerned party would be. When asked about this, handwriting analysis expert number four replied: "the accuracy of the report's findings and its explanations varies from one expert to another. The reason for this is due to the uneven linguistic experience of handwriting experts". Handwriting analysis expert number six added: "handwriting expert's main task is to examine and analyze the handwriting of the writer. When the text is in print, this puts them in front of a big challenge, and the results of the report would be inaccurate".

Judge number five raised a very important discussion point in this regard, as he noted "the expert's report must be convincing and contain accurate and unquestionable results". Pointing out that "doubt in the report of experience is considered an advantage in favor of the accused's lawyer". This is confirmed by lawyer number one, as he emphasized that "the expert's report should be based on scientific studies and give accurate and convincing results when attributing the authorship of the text to an accused or to a suspect". In this regard, lawyer number two added "As a lawyer, I would do my best to look for gaps in the expert's report and for any point of doubt that I can utilize to exonerate my client from the charge attributed to him".

4.1.3 Electronic written texts

During the interviews with the study sample, they pointed out that they deal on a daily basis with a number of cases in which complainants claim to have received for example, a phone message or an e-mail containing a threatening, blackmail, slander, hatred, or defamation message. When the researchers asked: *Who is responsible for dealing with cybercrimes in which electronic linguistic evidence is the source of the investigation?* All participants gave the same answer. For example - not exclusively - Prosecutor General number five answered: "such cases are transferred to the Anti-Cybercrimes Unit of the Criminal Investigation Department of Public Security Directorate to conduct the necessary investigation, identify the author of the text, and then present the results of the investigation to the competent judge to decide on the case".

Accordingly, the researchers conducted interviews with two specialized investigation officers from the Anti-Cybercrimes Unit, to discuss the investigation mechanism used in the unit regarding electronic written texts. The investigating officer number one noted that "when the complainant is transferred by the prosecutor, he submits his statement along with the complaint list and evidence. Considering this, the investigation officer initiates the investigation procedures in the case through two approaches: technical and intelligence". The investigating officer number two added "technical investigation includes the search for the source from which the electronic text was sent, for example, identifying the sender's phone number, the owner of the mobile SIM card and the IP address through the connection with the Jordanian communication networks and internet service providers. After collecting the required information, the intelligence investigation process begins to determine the author of the text through analyzing the data, identifying the perpetrator, interrogating him, and finally getting the confession. After the completion of the investigation process, a detailed report is submitted to the concerned prosecutor general and present it to the competent judge".

It seemed through interviewing the investigating officers that they are able to unravel any cybercrime by employing their technical, technological, and intelligence capabilities. Therefore, they were given as an example the murder crime that mentioned earlier in the empirical studies: The case of Jenny Nicholl, and how David Hodgson killed his girlfriend and sent four messages from her mobile phone to her family over the course of two weeks, to keep suspicion away from him. In fact, such crimes may happen anywhere and at any time. Therefore, the researchers followed this case up with the following question: *In case the murderer did not leave any fingerprints or any evidence other than some written messages sent from the victim's mobile phone, how can the investigating officers identify the author of the texts?*

The answers of the investigating officers related to this question indicated that it is not possible to find out the identity of the author of the text by such written linguistic evidence. And even if it is compared with the written texts of the suspect(s). Therefore, such evidence is considered an incomplete presumption, and the investigation is being continued to search for stronger evidence. The Investigating Officer number three noted "Such scenarios are really complicated and is considered a challenge for the investigating officers in the absence of other evidence or clues to solve the crime. It is also not possible to rely only on written linguistic evidence; the reason is the lack of specialized experts who can examine such evidence, and analyze it linguistically, and make the comparison with the other suspect(s) to identify the perpetrator". From this answer, it can be concluded that the presence of a forensic linguist who is able to investigate and analyze such electronic written evidence is a must and will have a positive impact on the development of the investigation process, by directing the investigation teams to the right search path, narrowing the search circle and identifying the suspect(s).

4.2 Spoken linguistic evidence

If, for example, someone claims that someone sent him a threatening voice message, the complainant must indicate the identity of the author. In some cases, however, these voice messages are anonymous. In this regard, the participants were asked the following question: *How do legal professionals, who work in the court, deal with anonymous spoken linguistic evidence?*

Judge number two pointed out "if someone claims that he has received a threatening voice message and he reports that he does not know who sent it and is unable to identify the author for any reason. The prosecutor asks him/her to point to a suspect(s). Thereafter, the audio recording is transferred to the Anti-Cybercrime Unit for a technical investigation to identify the device through which the audio was recorded. Consequently, the investigators will be able to determine the owner of the device". Prosecutor General number three added "in cases where there is spoken linguistic evidence, and there is no recognition from the accused/ suspect that he/ she is the author and denying the charge against him, a speaker recognition expert is requested from the Forensic laboratories Department to identify the speaker by comparing the disputed voice (spoken linguistic evidence) with the accused/ suspect's voice (undisputed voice)".

When interviewing the speaker recognition expert number one he noted "I submit my report containing one statement out of three, either the speaker's voice in the disputed audio recording (the spoken evidence) is identical to the speaker's voice in the undisputed audio recording (the accused/ suspect's voice), the two voices do not match, or it is not possible to determine the author of the sound". When speaker recognition experts were asked about the comparison mechanism they use to identify the author, The speaker recognition expert number two pointed out "the acoustics expert records the characteristics of each sound by entering the disputed audio recording, and an audio recording of the suspect (including the same speech found in the audio recording) to software that performs an auditory and technical analysis. And then do the comparison process to determine the extent to which the voices match".

In fact, forensic phoneticians must have sufficient knowledge about language and speech in addition to a thorough knowledge of phonology. Therefore, it was necessary to search for their scientific qualifications and the courses they obtained and examine the extent of its relevance to forensic linguistics. In this regard, the following question was asked: *What are the scientific qualifications that a phonetics expert must have to work as a speaker recognition expert?* The speaker recognition expert number one indicated "I have a bachelor's degree in computer programming and have the ability to use acoustics devices and voice comparison programs. He added "I have several courses in the field of speaker recognition". In addition, the speaker recognition expert number two asserted that he didn't study linguistics or phonetics.

5. Discussion

There are two important points to focus on regarding linguistic evidence. The first point is the ability to distinguish linguistic evidence from other circumstantial evidence and presumptions associated with them. The second point is to determine to what extent the linguistic evidence is relevant to the case and how important it is in guiding the course of the investigation or proving the identity of the accused or suspect. The person responsible for collecting, classifying and identifying evidence and deciding whether evidence relates to the case or not, is a judge called the public prosecutor, who is responsible for investigating crimes and tracking down the perpetrators (Article 14 and Article 17 of the Jordanian code of Criminal Procedure No. 9 of 1961 and its amendments).

The results related to the second study question showed that there is a consensus among the participants on the definition of linguistic evidence as a written or spoken judicial text related to a case and being investigated to determine the identity of the accused or suspect or those related to the crime. Such a comprehensive definition of the linguistic evidence is fully consistent with what was stated in Olsson (2004) study in this regard. It is known that a judge is a person with judicial jurisdiction who judges according to the law between disputants. His duty is to resolve disputes between two opposing parties, identify the perpetrator, make fair judgments, evaluate the crime committed and determine a fair punishment.

The review of related literature shows the ability of forensic linguistics to contribute to strengthening the process of legal analysis of linguistic evidence by applying accepted scientific principles of language analysis through the application of various linguistic theories and techniques. The results of the practical application of forensic linguistics in the courts of a number of developed countries (shown in empirical studies) have proved the important and vital role of a forensic linguist represented by the following: the ability to deal with all forms of linguistic evidence, the ability to answer most questions related to linguistic evidence through the application of various linguistic theories and techniques, provide a convincing report based on accepted scientific principles of language analysis, guide the investigative process on the right track, help the judge to make the appropriate decision and issue fair judgments. This is where there is an inconsistency between the results related to the second study question regarding the mechanism used in Jordanian courts to deal with linguistic evidence and what was mentioned in the empirical studies.

5.1 Written linguistic evidence

The results related to written linguistic evidence showed that the selection of the expert responsible for examining and analyzing the text and expressing his technical and professional opinion is based on how the linguistic evidence is written (handwritten, printed on paper, or electronically). For handwritten linguistic evidence, a handwriting analysis expert is requested to examine and analyze the text. The results of the interviews conducted with handwriting experts showed that their analysis of handwritten

linguistic texts is mainly based on the application of the principles of forensic handwriting analysis. Despite their recognition that identifying linguistic features and characteristics is very important and lies at the heart of their work and cannot be dispensed with or complete the analysis process without it, their analysis of the language is not based on the application of scientific linguistic principles. They rely on their experience and knowledge of the basics of the Arabic language only.

These results show that they do not know what is meant by forensic linguistics, and how this science is applied by forensic linguists. In addition, they are unaware that they are actually applying some aspects of forensic linguistics, by examining and analyzing written linguistic evidence by identifying quantifiable linguistic aspects (such as misspellings, use of punctuation and errors in punctuation, and word forms), and this is what makes their application of forensic linguistics marginal and minimal. For linguistic texts printed on paper, the court appoints a handwriting expert to examine and analyze such evidence, then submit a technical expertise report about it. In fact, it is very important to highlight the results related to the mechanism used to deal with such texts in the Jordanian courts. Through the interviews conducted with handwriting analysis experts, and discussing the subject of printed texts, they confirmed that their main task is to examine and analyze the handwriting of the author of the text. Simply because they have the ability to use scientific techniques and theories derived from forensic handwriting analysis. Thereby providing a report based on convincing and acceptable scientific grounds.

But printed texts deprive them of this advantage and put them in front of a big challenge. The reason for this is basically because they are not linguists. They do not have specialized knowledge of various branches of linguistics and applied linguistics. In addition, they do not have the ability to identify patterns that connect words, analyze and explain them. Also, they do not have the ability to build hypotheses, test them and choose the most appropriate ones, and they do not have the ability to apply various linguistic techniques such as discourse analysis, conversation analysis, applying general language theories and theories of speech action and others.

As for the written, electronic linguistic evidence, the results have shown that the court transfers it to the Anti-Cybercrime Unit of the Public Security Directorate for investigation. The researchers conducted several interviews with the investigating officers of the unit, as the interviews showed that there is no forensic linguists in the unit to deal with written or spoken texts linguistically. So, it was found that the investigation process is carried out through two approaches: 1. Technical investigation, where the investigation team tracks the electronic devices through which the phone message or e-mail is sent to determine the identity of the sender of the message. Jordanian telecommunications companies are committed to providing the Anti-Cybercrime Unit with the necessary information about the owner of the mobile phone number through which the message is sent (note that any SIM card is activated only after it is registered in the owner's name and obtaining the required details, including a copy of personal ID). As for e-mails and messages sent through other social media applications, they are tracked through the internet protocol (IP) of the electronic device through which the message is sent. Noting that the internet protocol and the location identification feature are obtained through internet service providers that are also committed to provide the Anti-Cybercrime Unit with the required information when needed.

2. Intelligence investigation. The investigation team of the anti-cybercrime unit collects the necessary information and identifies the accused or suspect, then he is summoned and interrogated. After the completion of the investigation process, a detailed report is submitted to the competent court.

Coulthard et al (2017) study indicates that the forensic linguist can examine and analyze all forms of written linguistic texts, this is because his work is based on language analysis through his ability to apply various linguistic techniques and theories. Written linguistic texts are made up of words, and these words are associated with patterns. Linguists are trained to identify, analyze, and explain these patterns by building competing hypotheses, and then testing the hypothesis that best explains the patterns in the data. In fact, what distinguishes a forensic linguist is his ability to cover a vast area of everything related to language, law, and crime.

5.2 Spoken linguistic evidence

It should be noted that forensic linguistics overlaps with forensic phonetics when spoken linguistic evidence is being investigated. Forensic phonetics is applied to cases heard by judicial courts for the investigation of spoken linguistic evidence by a specialized expert called a "forensic phonetician", whose primary task is to identify the speaker on the basis of recorded spoken language samples. A forensic phonetician is required to have a comprehensive knowledge of phonetics and Phonology, and be able to apply its various techniques and theories. The research studies showed that cases that contain spoken linguistic evidence are investigated on a daily basis in all criminal and civil courts. People prefer to express their opinions by speaking more than writing to save time and effort and express their feelings more clearly.

Regarding the mechanism used in Jordanian courts to investigate spoken language evidence, the results showed that what is being investigated is only anonymous audio recordings. Where they are technically investigated by the Anti-Cybercrime Unit to identify the speaker by searching for the device and the method by which the audio recording was sent, interrogation, and confession. In the event that the accused/ suspect denies the charge attributed to him/ her, or in case of the inability to identify

the author of the spoken text with the presence of a number of suspects, the audio recording is sent to the forensic laboratories to make a comparative analysis between the speaker's voice in the disputed text and the suspect's voice to determine the proportion of voice match.

The speaker recognition expert makes the necessary comparison using special devices and programs, with spectral images that measure the frequency (the number of times the sound oscillates per second). The problem is that the results showed that the speaker recognition expert is not a specialist in phonology. He acquires his knowledge in this area through courses that only enable him to use spectral image programs and compare sounds to determine the proportion of sound match. Therefore, the results and reports provided by speaker recognition experts are not based on scientific linguistic foundations and principles; therefore, experts are unable to provide a convincing explanation for the results of the investigation. On the other hand, if the acquired knowledge of a speaker recognition expert is not based on accepted scientific linguistic principles of language analysis, he will not be able to distinguish the sound, accent, or dialect manipulation.

Finally, there is an important point to be noted which is that spoken judicial texts do not mean only the existence of an anonymous spoken linguistic evidence. It is possible that cases may be brought to the court that require analysis of the spoken linguistic evidence of a person whose identity is known, and what is required is to prove that this person has committed an illegal act. Examples of these include false emergency calls, hate speech, threatening conversations, recorded statements, and audio recordings that contain hidden or encrypted messages.

6. Conclusion

Over the past three decades, forensic linguistics has proved its effectiveness and its ability to cover a very wide area of everything that connects language with the law in courts and judicial systems. Investigative forensic linguistics is considered one of the most important fields of forensic linguistics, because it provides powerful and convincing tools to test the validity of criminal charges or convictions. In addition, the analysis of forensic linguistics can be considered valuable in almost any situation where language can be considered evidence. Forensic linguists play an effective role in criminal and civil courts through their work with legal professionals, which leads to saving time and effort, directing the investigative process on the right track, providing reports based on convincing and acceptable linguistic principles, and thus facilitating access to justice. So this science has been welcomed and accepted by a number of developed countries, and it continues to spread and develop impressively. The problem of the study is that despite the importance of forensic linguistics, it is still an unutilized tool in Jordanian courts. The results showed that forensic linguistics is marginally and minimally applied in the Jordanian criminal and civil courts, by handwriting analysis experts who rely on their basic knowledge of Arabic. The results of the study, which was applied to a sample of thirty-four participants, showed that legal professionals participating in the study are not familiar with this term, due to the fact that forensic linguistics is not taught to law students at Jordanian universities. In addition, there are no Jordanian research studies clarifying the importance of applying forensic linguistics in the Jordanian judicial system, or discussing how forensic linguists can apply their linguistic knowledge to the examination and analysis of written and spoken linguistic evidence. The results also showed that there is no cooperation or connection between linguists and legal professionals in Jordan to discuss cooperation possibilities on matters where the law interferes with the language, and how to benefit from the experience and knowledge of linguists on how to investigate linguistic evidence linguistically. The results showed that the Jordanian judicial system is flexible and accepts any method of proof or scientific means that help prove the identity of the perpetrator or the identity of those related to the crime and helps in accessing justice. There is no indication that there are any restrictions preventing applying forensic linguistics in Jordanian courts.

As for the mechanism used in the Jordanian courts regarding the investigation of linguistic evidence, the results showed that written and spoken linguistic evidence are examined and analyzed by experts who are not specialists in linguistics. They do not have the ability to provide cogent reports based on convincing and acceptable linguistic principles. Their analysis of this evidence is based on varying experiences in their knowledge of the Arabic language only, which leads to a weakening of the argument of linguistic evidence in the court. Thus, if the linguistic evidence does not directly point to the author of the text and obtain a confession from the perpetrator of the charge attributed to him; then in many cases, the linguistic evidence is considered an incomplete presumption and therefore stronger evidence is sought. In addition, experts currently who are responsible for examining and analyzing linguistic evidence in Jordanian courts do not have the ability to deal with manipulated texts or written or spoken texts other than Arabic.

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