

**The Application of Forensic Linguistics in the
Jordanian Judicial System**

تطبيق علم اللغة الجنائي في النظام القضائي الأردني

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**A Thesis Submitted in Partial Fulfillment of the Requirements
for the Master's Degree in English Language and Literature**

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Middle East University,
January, 2024**

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Acknowledgements

يَا رَبِّ لَكَ الْحَمْدُ كَمَا يَنْبَغِي لِجَلَالِ وَجْهِكَ وَلِعَظِيمِ سُلْطَانِكَ، وَيُوفِي سَابِعَ نِعْمِكَ وَجَزِيلَ إِحْسَانِكَ

First and foremost, all praise is due to Allah's noble face, His immense authority, and His glorious blessings as much as it suits His glory and great power, and as much as it meets His countless blessings and abundant beneficence.

Actually, it is a chance of a lifetime to acknowledge the help and support I received throughout this journey. I was fortunate enough to have two wonderful supervisors, Dr. Wajed Al Ahmad and Dr. Mohammed Nofal, who believed in me and pushed me to the best of my abilities. So, thank you for everything.

I should also thank the study participants, who supported me, inspired me, and did not skimp on their time and knowledge.

I would also like to express my deepest gratitude to Dr. Nosaybah Awajan and Dr. Linda Al-Abbas who opened my mind to new knowledge in English literature, linguistics, and translation.

Special mention goes to Mr. Abdulleh Okkeh and Mr. Deia'a Alwaqfi, from the Middle East University's Book shop, who helped me greatly in editing my thesis.

Finally, and above all, I would like to thank my wife, Ghada, for her endless love, constant support, and for all late nights and early mornings. Your belief in me has kept my spirit and motivation high during this journey which wouldn't be possible without you.

Dedication

This thesis is dedicated to my wife Ghada and my children Muath and Yousef, who always see me the best. It is this confidence that had made me the person I am, and I promise to always maintain your trust.

To my parents who always belief in me.

To the loving memory of my dear brother, Muath Alkhalayleh. To his soul I say *“As long as I live, you will live. As long as I live, you will be remembered. As long as I live, you will be loved”*.

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The Application of Forensic Linguistics in the Jordanian Judicial System

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Abstract

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 some courts in developed countries. Despite its importance, it is still an unapplied tool in a large number of countries' judicial systems and courts. This study aims first to investigate to what extent forensic linguistics is applied in the Jordanian judicial system. Second, it aims to search for the mechanism used in the investigation and proof of linguistic evidence in Jordanian courts, and how language-related cases are handled. Third, this study aims to clarify the importance of applying forensic linguistics in Jordanian courts. Semi-structured interviews were conducted with thirty-four participants. The results of the study showed that forensic linguistics is marginally applied in the Jordanian judicial system, although there are no limitations in Jordanian law that prevent its application. The results also showed that written and spoken linguistic evidence are 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. The application of forensic linguistics in Jordanian courts will contribute to the development of the Jordanian judicial system, strengthen linguistic evidence as a tool of proof and investigation, save time and effort, and create a common ground linking linguists with legal professionals to exchange experiences and gain knowledge.

Keywords: forensic linguistics, Jordanian judicial system, linguistic evidence, cognitive theory of idiolect, stylistic theory of idiolect

تطبيق علم اللغة الجنائي في النظام القضائي الأردني

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المُلخَص

على مدى العقود الثلاثة الماضية، أثبت علم اللغة الجنائي فعاليتها وقدرته على تغطية مساحة واسعة جداً لكل ما يربط اللغة بالقانون في عددٍ من محاكم الدول المتقدمة. وعلى الرغم من أهميته، إلا أنه لا يزال أداة غير مطبقة في عدد كبيرٍ من أنظمة الدول القضائية ومحاكمها. تهدف هذه الدراسة أولاً إلى التحقق من مدى تطبيق علم اللغة الجنائي في النظام القضائي الأردني. ثانياً، تهدف الدراسة إلى البحث عن الآلية المستخدمة في التحقيق والإثبات للأدلة اللغوية في المحاكم الأردنية، وكيف يتم التعامل مع القضايا المتعلقة باللغة. ثالثاً، تهدف الدراسة إلى توضيح أهمية تطبيق علم اللغة الجنائي في المحاكم الأردنية.

تم إجراء مقابلاتٍ شبه منظمة مع أربعة وثلاثين مشاركاً. إذ أظهرت نتائج الدراسة أن علم اللغة الجنائي مطبق بشكل هامشي في النظام القضائي الأردني، على الرغم من عدم وجود أيّ تحديدات في القانون الأردني تحول دون تطبيقه. وأظهرت النتائج أيضاً أن الأدلة اللغوية المكتوبة والمنطوقة يتم فحصها وتحليلها من قبل خبراء ليس لديهم معرفة باللغويات، وليس لديهم القدرة على تقديم تقارير مقنعة تستند إلى مبادئ لغوية مقنعة ومقبولة مما يؤدي إلى إضعاف حجة الدليل اللغوي. إن تطبيق علم اللغة الجنائي في المحاكم الأردنية سيساهم في تطوير النظام القضائي الأردني وإعطاء وزنٍ للدليل اللغوي فيما يتعلق بالإثبات والتحقيق في القضايا. إضافة إلى توفير الوقت والجهد وخلق أرضية مشتركة تربط اللغويين بالمحترفين القانونيين مما سينعكس بشكل إيجابي على تبادل الخبرات واكتساب المعرفة.

الكلمات المفتاحية: علم اللغة الجنائي، النظام القضائي الأردني، الأدلة اللغوية، النظرية المعرفية اللغوية للفرد، النظرية الأسلوبية اللغوية للفرد

Chapter One

Introduction

1.0 Introduction

This chapter is a short run-through of the present study. It begins with the background of the study, followed by the statement of the problem, then continuing with the objectives, questions, significance, and limitations of the study. Finally, the definitions of terms that are used in this study are presented.

1.1 Background of the Study

Humans communicate with each other through language to express ideas and thoughts in both written and spoken forms. Hence language has been defined as a structured communication system used by someone that consists of sounds, words, and grammar (Finegan, 2004). According to Davies and Elder (2004), “language is what defines and delineates the whole of human knowledge” (p. 45).

Bauer (2007) points out that each person is distinguished from others in terms of the way he uses the language, whether written or spoken. To understand individual’s language differences, Fillmore et al. (1979) argue that people can differ greatly, and sometimes obviously, in the ways they use and control their language. Even with the same communicative goals, speakers will vary in many ways in their language performance, whether it is in the choice of words or intonation patterns, in the pacing of their utterances or in turn-taking strategies, or in the coherence or effectiveness of the total performance.

Researchers and those who are interested in language began to search for the source and nature of the differences that we see in linguistic behavior and linguistic abilities. The focus began on linguistics as a comprehensive science that studies all aspects related to language. Halliday (2003) states that linguistics involves a vast, complex and systematic study, divided

into two field studies; micro linguistics and macro linguistics. Micro linguistics is the study of the internal of language structure aspects. The study that is concerned with micro linguistics is phonology, morphology, syntax, and semantics. Meanwhile, macro linguistics is concerned with the external factor study of language. The studies related to this macro linguistics study is sociolinguistics, anthropolinguistics, psycholinguistics, ethnolinguistic, and applied linguistics (Umiyati, 2020).

Applied Linguistics as an interdisciplinary field is considered as one of the most important branches of linguistics. According to McMenemy (2002) it's concerned with using what we know about language, and investigating how to utilize this language to achieve a purpose or solve a problem in the real world. As is evident in the definition given by Wilkins (1999): Applied Linguistics is concerned with increasing understanding of the role of language in human Affairs and thereby with providing the knowledge necessary for those who are responsible for taking language-related decisions without the need for this arises in the classroom, the workplace, the law court, or the laboratory.

In this sense, forensic linguistics emerged as one of the most important branches and one of the increasingly prominent areas of applied linguistics. Olsson (2008) concludes that forensic linguistics is an interface between language, crime and law. Thereby, in its broadest sense, "forensic linguistics is the study of language in legal and investigative settings" (Tkacukova, 2019, p 190). McMenemy (2002) proposes forensic linguistics as a subfield study of applied linguistics that investigates, examines and analyzes the language in law field. In this case, the language concerns with the issues that occurred in law cases such as crimes or disputes, that lead to court which is used as evidence tool shown to police, lawyers, or judges.

Forensic linguistics covers a wide area for everything that connects language with the law. According to Coulthard and Johnson (2010) the field of forensic linguistics can further be categorized into three overlapping areas:

1. Investigative forensic linguistics such as comparative authorship analysis, determining disputed meaning, trademark and copyright infringement, plagiarism, deception detection, native language identification, language analysis for the determination of origin.
2. The study of the written language of law such as language policy, issues in legal translation, interpreting legislation, ambiguity in legal language.
3. The study of communication in the legal process such as court interpreting, vulnerable witnesses, courtroom discourse, police interviewing techniques.

Tkacukova (2019) notes that the three domains focus on all levels of linguistics analysis such as (grammar, syntax, lexis, discourse), while drawing on general linguistics and applied linguistics studies such as (pragmatics, psycholinguistics, sociolinguistics, discourse analysis, first/second language acquisition, and conversation analysis) as well as non-linguistics disciplines such as (forensic sciences, psychology, criminology and law).

Forensic linguistics presents comparable insights into the understanding of legally significant language data. Experts and specialized linguists in this field seek to investigate and give explanation to the non-random distribution of data. The scientific analysis in which forensic linguists engage has been increasingly utilized. Shuy (2001) notes that linguists now are applying their field's knowledge to such areas as statutory law and interpretation, voice and authorship identification, jury instructions, the asymmetry of power in courtroom exchanges, lawyer-client communication, police interrogation practices, contract disputes, legal discourse, courtroom interpretation and translation, copyright disputes, commercial warning messages, discrimination, ransom letters, and various types of criminal charges such as threatening, defamation, slander, extortion, sexual molestation, perjury, bribery, solicitation, money

laundering, blackmail messages, trademark infringement, plagiarism, fraud, spreading rumors, inciting violence and hatred, contempt for religions, and spreading false news.

In the second half of the twentieth century, the world witnessed tremendous development in the field of communication technology, and over time, electronic devices such as computers and mobile phones have become available to everyone. Electronic written text is one of the most widespread forms of communication between individuals, including emails, instant messaging (IM) and live chat, and text messaging (SMS). This development in the field of communications technology has led to the emergence of the so-called cybercrime, represented by the use of electronic means by people to carry out crimes and illegal acts, which include various types of criminal charges mentioned above.

On July 27, 2023, the Jordanian parliament approved the draft cybercrime law for the year 2023, which includes amendments to some articles of the law. This came due to the rapid development in the field of Information Technology, which necessitated criminalizing illegal acts that are carried out through the use of electronic means, and punishing the perpetrators in order to achieve public and private deterrence. This amendment to the Cybercrime Law through increasing the punishments, is clear evidence of the increasing number of cybercrime cases that are being referred to Jordanian courts. Language is considered a tool for committing such crimes, using writing and audio recordings. In this context, it should be noted that Cybercrimes are considered to be the core competence of forensic linguistics. Therefore, it is very important to figure out how important it is to apply forensic linguistics in such cases.

Practically all of such cases involve written or spoken linguistic evidence, making linguistic analysis very relevant. In this sense, one can imagine the vast area that forensic linguistics can cover. Currently, the problem is that, despite the importance of forensic linguistics as an “instrument to correct miscarriages of justice” (Olsson, 2009, p 5), and the

great amount of benefit that forensic linguists can provide to civil and criminal courts, forensic linguistics is still an “underutilized tool” (Leonard et al., 2017, p 884).

There is a great disparity in how countries utilize forensic linguistics. Despite the passage of almost 30 years since several pioneering countries in Europe, North America, and Australia began to use this discipline effectively in their courts (Coulthard & Johnson, 2007), its spread is still proceeding slowly in a large number of countries. The main reasons for this are: 1. Lack of connection between linguistic knowledge and legal knowledge. 2. Lack of awareness of what forensic linguistics is, or how to utilize/ integrate it into the judicial process. As Heydon (2019) points out that “forensic linguists have not adequately considered how to overcome the fact that most legal professionals either do not know what a linguist does, or think that, because they use language for a living, they are themselves experts in the subject” (P. 9).

1.2 Statement of the problem

The rapid development of technology has contributed to imposing major changes in the way that language itself is viewed and has increased the availability of real language for analysis. Technological development means that there are always new non-traditional cases being considered by courts, which may contain linguistic evidence in innovative ways.

By researching the extent of applying forensic linguistics in the investigation and proof of linguistic evidence in Jordanian courts, it became clear to the best of my knowledge that forensic linguistics is marginally applied in Jordanian courts, where some quantitative measurable aspects of forensic linguistics are minimally applied by handwriting analysis experts when they are asked to examine and analyze handwritten linguistic evidence in Arabic. Furthermore, there are no certified forensic linguists at the Expertise Department of the Jordanian Ministry of Justice, who are specialized in dealing with written or spoken linguistic evidence related to cases being investigated in criminal or civil courts. This is replaced by

calling either handwriting analysis experts to examine written linguistic evidence, or speaker recognition experts to investigate spoken evidence.

Handwritten linguistic evidence is examined and analyzed by handwriting analysis experts, mainly by applying their knowledge and experience of the science of handwriting analysis. Although they can identify some quantifiable linguistic aspects (such as misspellings, use of punctuation and errors in punctuation, and word forms), they cannot provide convincing linguistic explanations when presenting an experience report to judges. In addition, there is a problem in the mechanism of dealing with written printed and electronic linguistic evidence. The lack of a forensic linguist, who can examine and analyze such evidence linguistically and submit a cogent report based on acceptable and convincing linguistic principles to the court, weakens the argument and weight of such evidence and puts judges in front of real challenges. So, they either search for other stronger evidence, or relying on their personal conviction. In fact, this burden requires more time and effort. On the other hand, the absence of a forensic linguist in Jordanian courts means: 1. The inability to detect the manipulation of linguistic evidence, whether written or spoken. 2. The inability to deal with written or spoken linguistic evidence in a language other than Arabic. 3. The inability to detect the use of artificial intelligence in such evidence.

1.3 Objectives of the study

1. The study aims to investigate to what extent forensic linguistics is applied in the Jordanian judicial system.
2. The study aims to search for the mechanism used in the investigation and proof of linguistic evidence in Jordanian courts, and how language-related cases are handled.
3. This study aims to clarify the importance of applying forensic linguistics in Jordanian courts, and to present the benefits gained from its application in short and long terms.

1.4 Questions of the study

In order to achieve the objectives of the study, the following research questions were posed:

1. To what extent is forensic linguistics applied in the Jordanian judicial system?
2. What is the mechanism used in Jordanian courts to investigate and proof linguistic evidence, and how are language-related cases handled?
3. What is the importance of applying forensic linguistics in Jordanian courts?

1.5 Significance of the study

Forensic linguistics is a relatively new discipline, which was launched in 1994. It began to develop at the beginning of the second millennium. Therefore, to the best of my knowledge, this study is one of the first studies that shed light on the extent of applying forensic linguistics in the Jordanian judicial system. In addition, this study contributes to determining the importance of applying forensic linguistics in the Jordanian judicial system to be able to keep pace with the continuous technological development concerning language and law.

The methodological contribution that was adopted also gives great significance to the study, by granting legitimacy to the research based on validity and reliability, and providing sound scientific results. Also, it provides sufficient information for researchers who wish to write about this topic.

This study is also unique in its distinction regarding data collection process, as data is neither reachable nor available to public research, and can't be found in any other scientific research sources.

1.6 Limitations of the study

There are two major limitations in this study that could be addressed in future research: First, this study is a master's thesis with fixed deadlines for delivery purposes, and as a part-time master's student, the time is not enough to conduct comprehensive research on everything related to the study. In addition, the study targets a specific sample for the purposes of collecting data from judges, prosecutors, lawyers, police officers, and handwriting analysis experts who are only available during specific times, which led to another limitation related to time constraints. In order to overcome time constraints, it was necessary to create a schedule to make use of the time to the maximum extent, to avoid any time constraints that might negatively affect the findings of the study. And here appears the need to carry out future research on this study.

Second, since this study is one of the first studies related to applying forensic linguistics in Jordanian courts, it's expected to face another limitation related to the scarceness of previous research conducted on this topic. In order to overcome this limitation, it was necessary to choose the most appropriate scientific research methodologies to collect sufficient, valid, and reliable data that may help achieving the objectives of the study and to reach clear and comprehensive findings.

1.7 Definition of terms

Forensic Linguistics: Theoretically, it is a branch of applied linguistics that investigates, examines, or analyzes the language in the law field. Empirically, the term refers to the procedures that is used to solve language related problems in criminal and civil courts.

Forensic linguist: A linguistics expert who most frequently called in to help a court answer one or both of two questions: what does a given text 'say'? And who is its author? Based on

knowledge and techniques derived from multiple sub-areas of descriptive linguistics, such as phonetics, phonology, semantics, lexis, syntax, pragmatics, and discourse and text analysis.

Judge: 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.

Judicial text: Any linguistic material written or spoken in a legal or criminal context.

Handwriting analysis expert: A qualified person and a specialist in the examination and analysis of handwritten texts or signatures for the purposes of authentication and verification of the identity of the author, by carrying out a comprehensive comparative analysis between a set of questionable writing with a known set of writing.

Forensic phonetician: An expert with comprehensive knowledge of phonetics, whose primary task is to identify people on the basis of spoken recorded language samples.

Suspect: A targeted person who is viewed with suspicion. The public prosecutor has the right to arrest and investigate him in accordance with the code of Criminal Procedure and so far, no criminal prosecution has been initiated against him.

Accused: A person against whom criminal prosecution has been initiated and so far, judgment of conviction has not been rendered against him.

Defendant: A person against whom a judgment of conviction was rendered as a result of committing any act contrary to the law.

Cognitive theory of idiolect: A linguistic approach based on the interpretation of objective quantitatively measurable aspects of an individual's cognitive capacity.

Stylistic theory of idiolect: A linguistic approach based on qualitative explanations about why and how the language of individuals varies.

1.8 Summary

This chapter serves as a road map to the study, the title of the thesis was presented. The introduction serves as a motivation for researchers to delve into the depths of this study and contribute to presenting future research capable of strengthening the Jordanian judicial system and making it able to keep pace with development by highlighting the important role of applying forensic linguistics. Forensic linguistics was defined and a historical overview and stages of its development were given. This chapter also explained what the study is about by defining the statement of the problem, objectives and questions of the study.

Chapter Two

Review of Related Literature

2.0 Introduction

This chapter is divided into two parts; a review of theoretical literature and empirical studies related to the application of forensic linguistics. Through a review of theoretical literature, the most important studies and research that are considered the main pillars from which forensic linguistics emerged are presented, through which the importance of forensic linguistics in judicial systems is demonstrated, and where this research came from.

On the other hand, empirical studies present several cases containing linguistic evidence handled by well-known qualified forensic linguists, who applied various methods to examine and analyze this linguistic evidence and show how they present cogent and acceptable reports, based on linguistic foundations and principles to the court.

2.1 Review of theoretical literature related to the application of forensic linguistics

The term Forensic English was used by Philbrick (1949) in the title of his book on legal English, *Language and the Law: The Semantics of Forensic English*, but the phrase was never taken up. Almost 20 years later, the first use of forensic linguistics in practice was in 1968 as the result of the work of a linguist named Jan Svartvik who published *The Evans Statements: A Case for Forensic Linguistics*. Svartvik demonstrated that disputed and incriminating parts of a series of four statements which had been made to police officers by Timothy Evans about the murders of his wife and baby daughter, had a grammatical style measurably different from that of undisputed parts of the statements (Coulthard & Johnson, 2007). Thus, a new area of forensic expertise was born to be used in criminal and civil courts.

In the 1980s, Australian linguists discussed applying linguistics and sociolinguistics to legal issues. For instance, they found out that a phrase such as “the same language” is open to

interpretation and needs more explanation. In 1988, the Federal Criminal Police Office (BKA) in Germany organized a two-day forensic linguistics conference. Four years later, the first British seminar on forensic linguistics was held at the University of Birmingham in 1992. It was attended by delegates from Australia, Brazil, Holland, Ireland, Ukraine, Greece, and Germany as well as the UK.

Coulthard and Johnson (2007) note that the early forensic linguistic research originated in a wide range of disciplines (e.g., linguistics, law, psychology, sociology and anthropology) and included topics as diverse as handwriting analysis, forensic phonetics and role of the linguist as an expert in court, covering work in Australia, Europe and North America.

Due to the importance of this science, some countries have started teaching it at universities. The first MA course in forensic linguistics was introduced at Cardiff University in 1999. The Centre for Forensic Linguistics was established at Birmingham's Aston University to cope with the increasing demand for forensic linguistic skills in 2008 (Gao, 2010). Since then, research has continued to emerge from all these disciplines, making forensic linguistics a multi-and cross-disciplinary field.

Investigative forensic linguistics is one of the most popular and applied 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 et al., 2011). The challenge is that investigative work can be extremely varied and each case may require developing its own methodological approach (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 are 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 (1997) 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 (2004) 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 distinguish 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.

The German linguist Hänlein (1998) uses authorship recognition method - a Corpus-based Approach - by analyzing 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.

From another point of view, Olsson (2004) points out that the linguistic fingerprint is nothing but a superstition, referring to the so-called "linguistics uniformity" and university education. He says that in the past we have been able to distinguish individuals by their use of language, because of the dialectal variation. But 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 contributes 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.

As for the technological development related to written or spoken linguistic evidence, cybercrime relies heavily on text-based communication. In fact, "most forms of abuse online manifest textually" (Williams, 2001, p. 164). The spread and popularity of electronic and social media means that there are many new opportunities for collecting linguistics evidence, benefiting both investigators and forensic linguists (Bhatia & Ritchie, 2013). On the other hand, the need to investigate shorter texts such as e-mails, text messages or social network (e.g., Facebook posts and Twitter feeds) in recent years has been on the increase (Coulthard et al., 2011, p 536).

We conclude from the above that forensic linguistics contributes to the development of judicial knowledge and experience, so legal professionals should study it to be able to deal with linguistic evidence. Olsson (2004) has identified the target group for learning forensic linguistics starting from law students, investigative police officers, lawyers ranging from solicitor to senior barrister, handwriting analysis experts, magistrates, and judges.

2.2 Empirical studies related to the application of forensic linguistics

Forensic linguists proved that applying investigative and evidential forensic linguistics enhances the legal analysis process in cases where there is linguistic evidence, through applying scientifically accepted principles of language analysis. They can apply variant techniques such as conversation analysis, discourse analysis, general language theories, and speech act theories. These processes could be only reached through forensic linguists whose essential task is to provide "advice and opinions for investigative and evidential purposes" (Coulthard et al., 2011, p 536).

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 a 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.

Linguists use various methods in authorship attribution. For example, some of them use statistics to measure probability. In fact, all science bases its results on probabilities, and there is no science that proves or tries to prove anything (Olsson, 2004, p 20). In a trial of four women writers, Chaski (2001) found that by calculating the frequency of a set of lexical features, three women writers showed a probability of less than 5% with respect to authorship attribution to the disputed text. On the contrary, the real author of the text showed a probability of 23%. Relying on the basis of this probability the author of the text was determined. Although the percentage is not high, but compared to the percentage of authorship attribution to the other three suspected women, Chaski considered this as an achievement.

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 (Grant, 2013).

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 was 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 of 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 analyzed 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 and 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 came to a conclusion 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, 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 and Grant, 2013), by highlighting the distinctions between the two authors in relation to the same features.

In addition to the empirical studies presented above, it is worth mentioning the ability of forensic linguists to detect language manipulation. Forensic linguists have helped in investigations and testified for prosecution and defense in different types of cases by building on different areas of applied linguistics. Drawing on sociolinguistic research, the American forensic linguist Roger Shuy analyzed a ransom note and concluded that the author was an educated man from Akron, Ohio trying to disguise himself by manipulating the language (he made spelling mistakes in simple words, but spelt more complex words correctly and included dialectal lexis). Shuy's report provided the police with enough information to find the suspect (Perkins & Grant, 2013).

The cases above demonstrate the critical role that forensic linguists play when working with the police, prosecution, and defense teams to facilitate access to justice. Forensic linguistic analysis is valuable in almost any situation where language can be considered evidence, and can provide robust and convincing tools for testing the validity of criminal charges or convictions.

2.3 Summary

The theoretical literature review demonstrated how the field of Investigative forensic linguistics enhance legal analysis by applying scientifically accepted principles of language analysis to the courts where there is linguistic evidence. A number of investigated cases were presented by competent forensic linguists who employed their knowledge in all linguistics fields, to serve judicial justice efficiently and professionally. They have formed the basis and starting point for forensic linguistics in a number of courts around the world.

Chapter Three

Methodology

3.0 Introduction

This chapter gives an outline of the research method that was followed in the study. It provides information about the participants, such as the criteria for inclusion in the study, who the participants are, and how they were sampled. It describes the research design that was chosen for the purpose of this study plus the reasons for this choice. The instrument that was used for data collection is also described, and the procedures that were followed to carry out this study are included. It also discusses the methods used to analyze the data.

The purpose of the current study fits well with the exploratory paradigm of research. Although quantitative measures are applicable to such topics, this study adopts a descriptive qualitative analysis of the data to delve into the facts, causes, and ramifications of such a complex topic.

3.1 Population and sample of the study

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 these evidences. 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 linguistics academics 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 convenient sample has been selected for the purpose of the study. All the points discussed with the study sample were taken into account, 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 of 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 Instrument of the Study

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. And it's worth noting that it was very important to reach details and richness by being, as a researcher, as clear and concise as possible, in order 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.

Appendix (A) shows the main and sub-questions that the researcher addressed to the participants during the interviews. 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 researcher and the participant interact objectively and clearly without ambiguity or bias. This in turn enabled the researcher 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 epistemological stance and his personal experience (Hennink et al., 2020). Thus, the researcher critically questioned his position, power relations, his interpretations and decisions on an ongoing basis in order to minimize any subjective perspective, assumptions, or fixed understanding.

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 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 except the researcher's supervisor. In addition, the participants' data and personal details stored in a secure place where no one can access it except the researcher. Anonymity and confidentiality of the data were given priority. The participants were informed that their real names would be replaced with pseudonyms (job title), and that none of their personal details would be used so that no one could identify them from their details.

3.3 Validity and reliability of the instrument

The researcher believes that good research should have valid and reliable instrument in order to increase transparency, and decrease researcher's bias. Here lies the responsibility of the researcher to choose the appropriate research instrument, and make an effort to measure its validity and reliability. Creswell (2005) asserts that reliability means that the instrument's results are consistent and stable, and should remain the same when the instrument is conducted repeatedly at different times. On the other hand, validity means that the instrument's results are meaningful and allow the researcher to derive good conclusions from the sample of the study.

To this end, the reliability of the research instrument was measured in partnership with a panel of experts in the field of law and linguistics to determine the appropriateness, clarity and acceptability of the form and content of the interview guide and its questions. After the interviews were conducted, the reliability of the research instrument was measured by following the test-retest method, by re-interviewing the participants three weeks later, asking them the same questions, and comparing the previous and current results, which were almost the same.

The researcher found through the research observation that the application of interviews as a research method for this study gave the required reliability and validity; after measuring the reliability of the research instrument, which gave identical results at different times. In addition, the validity of the research instrument was measured during two stages: the first stage before the implementation of the interviews, as the interview questions and the interview guide were presented to a panel of experts who confirmed the effectiveness and comprehensiveness of the direct and proposed discussion questions. The second stage after the implementation of the interviews, where it was confirmed that the research instrument gave the required accurate results that helped the researcher achieve the research objectives and come to good conclusions.

3.4 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 researcher conducted re-reading to the data in order to take out necessary notes. After that the researcher 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 researcher also transcribed the audio recordings into analyzable texts. 2. Coding step. At this stage, the researcher 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 researcher 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 researcher 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.

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 researcher 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.

3.5 Procedures of the study

In order to accomplish the objectives of the study, the following procedures were followed:

1. After the topic of the study was chosen, the researcher read several books and research papers related to forensic linguistics. The researcher then proceeded to read several books and research papers related to written and spoken linguistic evidence, and how it is investigated and proven in the Jordanian judicial system.
2. The researcher identified the problem of the study by comparing the data related to the role of forensic linguistics in the judicial systems in general with the mechanism used in the investigation and proof of linguistic evidence in the Jordanian criminal and civil courts.
3. After that, the researcher identified the goals and questions of the study.
4. The researcher has chosen the most appropriate research instrument for data collection, which answers all the study questions and achieves all the study objectives.
5. The study sample was carefully selected, as the researcher diversified the sample in terms of the nature of the work, experience, and scientific level to ensure achieving all study objectives.
6. Official permission was obtained from Middle East University to facilitate the process of collecting data. Written consent also was obtained from the participants in the study

sample, after agreeing with them on everything related to the purpose of the study and the method of collecting and storing data.

7. After that, the data was collected by conducting several semi-structured interviews with the participants for four months. Face-to-face interviews were carried out in multiple venues in coordination with the participants. In addition, some phone calls were made with the participants to clarify some of the points discussed during the interviews.
8. The collected data were analyzed following Braun & Clarke's (2006) six-stage thematic analysis which was adopted to identify the salient themes in the data, as mentioned above.
9. The results of the study were identified, and the researcher presented them and provided explanations and assessments of these results. After that, the researcher discussed these results and compared their compatibility with related literature review.
10. After that, the researcher summarized the conclusions reached based on the main findings of the study.
11. The researcher then proposed some recommendations related to the application of forensic linguistics in the Jordanian judicial system, in addition to putting forward some recommendations for future research in this regard.
12. Finally, the researcher listed the references (APA style) and appendices.

3.6 Summary

In this chapter, the researcher justified his methodological choices and provided a detailed description of the steps taken throughout the research. A detailed account of the participants was provided. The researcher explained the data collection instrument that was used with a detailed elaboration of the mechanism that was followed to collect data; with focusing on ethical considerations which were of great importance to his fieldwork including anonymity and confidentiality of his participants' details.

The validity and reliability of the research instrument and the methods used to measure them were also touched upon. The researcher mentioned the method used to analyze the data, which consists of six overlapping stages that were worked out by hand, accurately and in detail. Data analysis was an ongoing process in the sense that the researcher was transcribing and analyzing as he was collecting data. After that, in-depth discourse analysis and close reading were carried out resulting in the findings presented in the following chapters. Finally, the chapter was ended up by mentioning the procedures of the study.

Chapter Four

Results

4.0 Introduction

This chapter reviews the findings obtained after the data analysis phase. The results were classified and arranged according to the study questions. Then the similar results that fall within the perimeter of the question were sorted and placed within major and sub-themes, which are explained systematically and comprehensively.

4.1 Results related to the first question

To what extent is forensic linguistics applied in the Jordanian judicial system?

In fact, judicial systems of any kind deal with linguistic evidence in different ways. There are countries that still adopt traditional methods of dealing with such evidence, while there are other developed countries that deal with such evidence based on cogent linguistic principles applicable with all forms of linguistic evidence. After the emergence of forensic linguistics, it has proved its effectiveness and ability to cover a very wide area ranging from handwritten linguistic evidence to those transmitted by various electronic devices whether written or spoken. This science has been welcomed and accepted by a large number of developed countries, and it is still spreading and developing impressively.

To find out the position of the Jordanian judicial system on the path of judicial development, the researcher started to rummage the existence of forensic linguistics, its application in Jordanian criminal and civil courts, the awareness of legal professionals of this science, and the level of flexibility of the Jordanian judicial system and its acceptance of new advanced sciences that help achieve legal justice and enhance it. Based on this, the results related to the first study question above were analyzed through the following theme:

4.1.1 Forensic linguistics awareness

Forensic linguistics awareness here means familiarity of this science initially as a term for legal professionals participating in the study sample, then investigating the possibility of its existence and application or not. Therefore, it was very important to ask the following question - which is considered a pivotal question rooted in the study problem - to all participants at the beginning of each interview before going into any discussion, namely: *Is the term forensic linguistics familiar to you?*

90% of the participants answered that the term forensic linguistics is unknown and unfamiliar to them, since they did not study it during the undergraduate stage and did not apply it in practice in Jordanian courts. 10% of the participants gave inaccurate answers that are closer to the legal language and legal terminology. Judge number one confirmed that he holds a doctorate in law, and that he has not studied the subject of forensic linguistics at any stage of University study (Bachelor, Master, or Doctorate). He also pointed out that “the language-related subjects taught at universities for law students are legal language and legal terminology only”.

The prosecutor general is one of the most important elements of the judicial system. He is the head of the law enforcement in his area, and all judicial officers are subject to his supervision (Jordanian code of Criminal Procedure, 1961). He is responsible for investigating crimes and prosecuting their perpetrators. Also, he is responsible for the classification and investigation of evidence and presumptions in legal cases he works on. When the prosecutor general number one was asked about forensic linguistics, he replied “It seems to me that forensic linguistics is a modern science that is not applied in the Jordanian judicial system which is supposed to be represented by a specialized expert in Jordanian courts. For me this term is unfamiliar”.

It is known that the judicial culture and legal terminology differ from one country to another, therefore the possibility of applying a similar science that investigates and analyses language in the legal field by a different name is possible. So, after the completion of the first question, each participant was given an introduction to forensic linguistics in its general concept and its three areas (investigative forensic linguistics, the study of the written language of law, and the study of communication in the legal process); then it was noted that this study targets specifically the field of investigative forensic linguistics, where the researcher explained it and provided an idea of the areas of its application.

After the participants were given an overview of forensic linguistics, specifically investigative forensic linguistics, the researcher moved directly to the second question which aimed at searching for any link that falls within the circle of forensic linguistics under research, namely: *Is there a specific science concerned with examining, analyzing, or investigating judicial texts related to cases in Jordanian courts?* The participating legal professionals (judges, prosecutors, lawyers) asserted that there is no application of a specialized science concerned with the investigation of judicial texts and linguistic evidence or analyze it. They also noted that there is no forensic linguist expert is called upon to examine such texts, or is asked to submit a report proving his linguistic opinion. Police investigations officer number one answered “within the framework of the judicial investigative process, there is no application of a specific science of this kind. Since police investigations task in the investigation process is carried out through two tactics: intelligence and technical”.

The interviews began to take an interactive form when the researcher asked this question to the handwriting analysis expert number one, as he pointed out “the term forensic linguistics is unfamiliar to me, and its meaning is unclear. But if it is related to the investigation of handwritten texts, then it should be noted that the science of handwriting analysis is mainly related to language”. Handwriting analysis expert number two added “the handwriting analysis

expert is responsible of determining prominent linguistics features such as the author's language, writing style, dialect, and educational level. Then making the necessary comparative authorship analysis".

Through this answer the researcher reached a common ground with handwriting analysis experts regarding forensic linguistics. But the question here is: *What is the source of language-related knowledge for handwriting analysis experts?* In other words: *What scientific principles does a handwriting analysis expert base his hypotheses on, and how are these hypotheses tested and proven?* When the researcher asked the handwriting analysis experts participating in the study sample about their scientific qualifications, he found that they have university degrees in chemical, genetic engineers, or other majors.

The point is that their scientific qualifications and their knowledge related to the science of handwriting analysis are very far from linguistics. Although they deal directly with the written language by searching for individual linguistic features, there is no correlation between their mechanism of action and the need to possess knowledge of linguistics. When they were asked about the source of knowledge they have of linguistic characteristics when analysing a handwritten judicial text, and whether they have specialized courses in linguistics, the answer was confusing. As the handwriting analysis expert number four noted "I'm not specialized in linguistics or Arabic language, and I did not get specialized courses in this field; because, from my point of view, there is no need for them". Handwriting analysis expert number one added "we all have sufficient knowledge of Arabic language, and handwriting analysis experts can develop this knowledge by focusing on specific aspects related to their field of work, as this knowledge is acquired through handwriting analysis courses and experience".

Handwriting analysis expert number six added "we deal only with the handwritten document. Our main task is to search for prominent features between the disputed text and

undisputed text by studying the natural variation domain (variations of the writing hand), and the written characteristics, then comparing between them”. This point led the researcher to one of the most important questions related to the work of handwriting analysis experts, which is: *Can a handwriting analysis expert deal with printed texts on papers, or electronic written texts (such as SMS phone messages and emails)?* Forensic handwriting experts all together answered that the range of their work does not go beyond the analysis of handwritten documents, the comparison of signatures, and the detection of forgery. From this answer we find that the work of forensic handwriting experts has a limited overlap with forensic linguistics, and this will be explained in detail in the second part of this chapter.

In this context, studying the flexibility of the Jordanian judicial system is very important; in order to determine the reason for the not applying forensic linguistics comprehensively in Jordanian courts. Flexibility can be measured through researching the extent to which the system can accommodate forensic linguistics as a new method of proof to deal with all forms of linguistic evidence in its traditional and technological fields, and as a scientific method that contribute to directing the investigative process in a correct direction and help the judge in making the appropriate decision. Therefore, through the interviews that have been conducted, the following question was asked: *Does the Jordanian judicial system restrict the methods of proof and scientific means approved in the court?*

Judge number two answered “Jordanian law is flexible and accepts any modern scientific means that help in investigating the facts and achieving justice”. He added “one of the legislations that shows this is what is provided for in Article 147/2 of the code of Criminal Procedure, which includes: (Evidence shall be presented in felonies, misdemeanors and violations by all means of proof and the judge shall rule according to his personal conviction)”. This legal text shows that the Jordanian judicial system accepts all methods of proof. We note from the participants' answers that the Jordanian law is very flexible and

receptive to any scientific means or method of proof that contributes to revealing the facts and helps judges to make fair judgments.

4.2 Results related to the second question

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

Before presenting the results relating to this question, 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 an 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, mainly related to the subject of the study: *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 the most of the participants in the study sample defined the 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:

4.2.1 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 the 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 these linguistic evidences, the written linguistic evidence has been divided into the following three types:

4.2.1.1 Handwritten linguistic texts

Based on the relevance of the handwritten linguistic evidence to the case, the prosecutor decides on the need to use a handwriting expert to identify the author of the text. Hence the researcher 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 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, his 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 researcher 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 code of Criminal Procedure 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”.

4.2.1.2 Linguistic texts printed on paper

Assuming that a ransom note printed on a piece of paper was found at a crime scene next to a body of a murdered 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 itself are might be unclear for whatever reason. The researcher gave such a scenario to prosecutors to find out what actions they take in connection with such evidence. The Prosecutor Generals all together agreed that they would ask for a handwriting analysis expert to examine the printed text.

During the interviews conducted with handwriting experts, the researcher 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 have to 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 researcher 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 containing 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”.

4.2.1.3 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 researcher 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 researcher 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. In light of 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 get 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 researcher 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 a 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).

4.2.2 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. But in some cases, 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 a 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 examining 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 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.

4.3 Results related to the third question

What is the importance of applying forensic linguistics in Jordanian courts?

To understand the importance of applying forensic linguistics in Jordanian courts, it is necessary to determine the need for its application, and the benefits gained apply it. Therefore, the data were analyzed and the results were classified according to the following themes:

4.3.1 Acquisition of knowledge of Forensic Linguistics

Through the interviews held with the participants, the researcher have explained and clarified the vast area covered by forensic linguistics, and the ability of the forensic linguist to submit a cogent report based on scientific linguistic principles that help the judge to make an appropriate decision and help the legal professionals to direct the investigative process towards the right track. From this point of view, the participants were asked the following question: *Do you think that legal professionals need to acquire knowledge of forensic linguistics?*

After the participants understood what forensic linguistics is, and what benefits can be obtained if it is applied, they all praised its importance. They noted that as legal professionals they will acquire knowledge that will make them able to deal with written and spoken judicial texts. An example of this is what the judge number four replied “I believe that the legal professionals who work within the Jordanian judicial system need a specialized knowledge of dealing with written and spoken judicial texts; because until now the linguistic evidence is treated as a presumption and always needs substantiated and circumstantial evidence to support it”.

Judge number six pointed out that “the presence of competent forensic linguists will greatly help to enrich the knowledge of judges by providing acceptable and convincing reports to the

concerned party, and free from doubts”. In addition, lawyer number five stated “the presence of a linguistics expert is an urgent necessity, because there are many linguistic evidences that are either analyzed and investigated through the lens of experience and personal conviction, or non-specialist experts are assigned to consider them. Therefore, unconvincing reports are submitted to the court that are not based on proven scientific foundations”.

Lawyer number six added “as a lawyer, I don’t have the ability to object to an expert report or a judge's decision regarding a linguistic evidence. But if I had knowledge of forensic linguistics or if there was a linguist whose opinion could be consulted, it would be different to what it is now”. As for the investigation officer number five stressed that “teaching police investigations officers on the principles of forensic linguistics will contribute significantly to properly directing the investigative process”. He added “the presence of forensic linguists will save time and effort, and will help the investigation officers to narrow the circle of suspicion”.

4.3.2 Creating a common ground that brings linguists together with legal professionals

Among the questions that were asked during interviews the participants is: *Do you have the ability to examine and analyze linguistic evidence linguistically?* Although the participants admitted that they were not specialists in linguistics, their opinions regarding the need to have such knowledge of linguistics varied. Some of them consider that it is not necessary to have any knowledge of linguistics, and some of them consider that knowledge of linguistics is useful in their field of work. To display the results based on the participants’ answers, some of the answers will be highlighted. For example, Judge Number two noted “I did not have any knowledge of linguistics, but on the other side I have sufficient knowledge of Arabic language”.

Lawyer Number four pointed out “as a lawyer, I did not see the need to have a specialized knowledge of linguistics”. On the other hand, the handwriting analysis expert number six noted

“if I had knowledge of linguistics, it would have helped me a lot in my work”. In other ways, the linguists were asked: *Can you utilize your linguistic knowledge to examine and analyze linguistic evidence and investigate judicial texts?* The linguist number one replied “I believe that the method of examining and analyzing linguistic evidence is different from the method of examining and analyzing other linguistic texts, as a forensic linguist must be qualified and specialized to investigate such evidence. In addition, the forensic linguist must have a basic knowledge of the law and the mechanism of the investigative process in cases containing linguistic evidence”. While Linguist number two pointed out that “forensic linguistics is an interrelated science that includes three main joints (language, law and crime), so the linguist must be sufficiently qualified by acquiring basic knowledge of law and forensic science to be able to analyze the linguistic evidence and submit a convincing report to the judge in court”.

This distance between legal professionals and linguists is considered as a chasm. If forensic linguistics is applied in Jordan, this gap will gradually narrow, and over time there will be a common ground that brings together both legal and linguistics professionals through which knowledge is exchanged and forensic linguistics is developed. This is what prosecutor number one hinted at when he was asked: *How is it possible to create a bridge of cooperation between linguists and legal professionals, in order to apply forensic linguistics in the Jordanian judicial system?* He pointed out that “legal professionals and linguists should be brought together at the discussion table. The legal professionals could present the challenges they face when they deal with linguistic evidence, and linguists can suggest solutions. They also may share experiences”. Judge number three also added “I believe that it would be so useful to benefit from the expertise of academics in linguistics by teaching the subject of forensic linguistics to law students”. On the other hand, handwriting analysis expert number one indicated that “I believe that there is an urgent need to provide forensic handwriting experts with specialized courses in forensic linguistics, as this will increase the level of their experience and develop it”.

Then again, the results related to the participants' awareness of forensic linguistics showed that there are no Jordanian research studies conducted on applying forensic linguistics in Jordanian courts; the reason, as I mentioned earlier, is that gap between knowledge of law and linguistic knowledge. Here appears one of the most important benefits of applying forensic linguistics in the Jordanian judicial system, represented by writing research studies which will contribute positively to the dissemination of linguistics knowledge in Jordanian courts. This is what the participants pointed out during the interviews, where Judge number three confirmed that “the application of forensic linguistics will contribute to expanding the horizon of knowledge among legal and linguistics professionals alike, by participating in writing research studies related to forensic linguistics”.

4.3.3 Applying forensic linguistics in cybercrimes

Cybercrimes are considered to be the core competence of forensic linguistics. Therefore, it was very important to figure out how important it is to apply forensic linguistics in such cases. On that account, the participants were asked the following question: *Do you think that having a forensic linguist who is able to examine and analyze written and spoken texts related to cybercrime cases, in Jordanian courts, will be useful?* The participants emphasized the urgent need to have a linguistics expert to examine and analyze written and spoken texts related to cybercrime cases. For instance, Prosecutor General number one referred to a very important point that “the application of the Cybercrimes Law 2023 will not prevent people from committing crimes, but that some criminals with a history of committing cybercrimes will continue to do so, but in an innovative way by manipulating the language”. Pointing out that such actions will make the investigative and evidential process complicated.

This point led the researcher to ask: *What is meant by language manipulation, and how is it detected and dealt with?* Judge number four answered “there are many ways to manipulate electronic written texts, including: 1. Change the shape of letters or words. 2. Adding shapes

and symbols to texts. 3. Hinting at something indirectly. 4. Using specific words addressed to a particular group to communicate encrypted messages between them. 5. Sending implicit messages whose literal meaning differs from their intended meaning in social contexts and understandable to native speakers of the written language”.

Besides, the participants emphasized that even the spoken texts are also being manipulated. Speaker recognition expert number two has pointed out “Some people manipulate their voice recordings in several ways, including: 1. Change the accent. 2. Amplify or soften the voice. 3. Change the style and manner of speech”. The participants noted that the examination and analysis of such linguistically manipulated texts is very difficult. Thus, it is hard to prove the charges attributed to the perpetrators. Judge number five noted “handling such cases is carried out either with circumstantial evidence or with the personal experience and conviction of the competent judge”.

4.4 Summary

This chapter is considered one of the most important chapters of the study, through which the questions of the study were answered and reached its three objectives by presenting the results related to each question. The results related to each question were collected and then classified into major and sub-themes. In addition, the questions that were discussed with the participants during the interviews and how the participants reacted to them were presented. A number of answers were selected and presented that represent the participants' Agreement and unanimity on the same answer to each question or discussion point. The most important ideas touched upon by the participants, which are directly related to the questions and objectives of the study, were also highlighted.

Chapter Five

Discussion, Conclusions, and Recommendations

5.0 Introduction

This chapter provides the reader with a summary of the main findings and provides explanations and interpretations of the importance of the results related to each of the study questions by delving into the meaning, importance, and relevance of the results, and how they relate to literary reviews. Then a concluding summary of the study is presented, and finally, recommendations for the application of forensic linguistics and recommendations related to future research on this topic are given.

5.1 Discussion of the results related to the first question

To what extent is forensic linguistics applied in the Jordanian judicial system?

5.1.1 Forensic linguistics awareness

The study of the participants' awareness of forensic linguistics by searching for their familiarity with this term is rooted mainly in the problem of the study. Their lack of familiarity with this term proves that they did not study forensic linguistics theoretically during their university studies - note that most of them have university degrees in law - and did not apply it practically in Jordanian courts. The hint of a number of participants, however, that forensic linguistics seems to them to be a modern science, indicates that there is no judicial body directly responsible for following up modern scientific means and modern methods of proof used by courts in developed countries.

In addition, opening the curtain before the Jordanian Judicial Council to modern scientific methods of proof, such as forensic linguistics, is a responsibility shared by both linguistic and legal academics through their duty as researchers to research and study these modern sciences and conduct research papers on them. Then they should present them to judicial decision

makers to contribute to the development of the Jordanian judicial system and thus support the process of achieving judicial justice.

By looking at the review of theoretical literature and empirical studies (see chapter two), we find that those who introduced forensic linguistics and proved its effectiveness in the investigative and evidential process are mainly academic researchers in linguistics. They used their knowledge in various branches of applied linguistics and established forensic linguistics theoretically and empirically, and then applied it practically in judicial courts and succeeded in proving its effectiveness. As mentioned in related literature review such as Shuy (2001), Olsson (2004), Coulthard and Johnson (2010), & Perkins and Grant (2013).

The forensic handwriting experts participating in the study sample confirmed that the science of handwriting analysis is based mainly on linguistic knowledge. In addition to the need for handwriting analysis experts to have sufficient experience in how to analyze the author's handwriting, they have to be able to identify the linguistic characteristics and features of the author. But the researcher found out that this linguistic knowledge indicated by forensic handwriting experts is based on knowledge of the basics of the Arabic language only, and this knowledge can be developed through experience. Because they earn their living through language, they think that their linguistic experience is sufficient and there is no need for them to have a linguistic knowledge or for their linguistic knowledge to be based on scientific foundations. This is fully consistent with the study of Heydon (2019) who points out that forensic linguists have not adequately considered how to overcome the fact that most legal professionals either do not know what a linguist does, or think that, because they use language for a living, they are themselves experts in the subject.

On the other hand, the researcher found that forensic linguistics is applied minimally in Jordanian courts. Even more, although legal professionals apply some principles of Forensic

Linguistics, they are unfamiliar with forensic linguistics. Therefore, the researcher had to investigate whether there are any limitations in the Jordanian judicial system that hinder its application. This was investigated by studying the flexibility of this system to accept and adopt methods of proof and modern scientific means. The results presented by the participants through legal articles showed that the Jordanian judicial system 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 help in accessing justice. Here we find a consensus between the goal of the Jordanian judicial system to accept the methods of proof and modern scientific means, mentioned in Jordanian code of Criminal Procedure (1961) and studies that have been mentioned in the related literature review regarding the benefits of the application of forensic linguistics, such as Shuy (2001) and Olsson (2009).

The researcher explained in the related literature review that forensic linguistics contributes to the development of judicial knowledge and experience. In addition to that, its application in both investigative and evidentiary aspects enhances the process of legal analysis by applying the principles of linguistic analysis scientifically accepted in courts in cases where there is linguistic evidence. Forensic linguistics analysis is valuable in almost any situation where language can be considered evidence, and can provide powerful and convincing tools for testing the validity of criminal charges or convictions. Forensic linguists also play an important role through their work with courts and police investigations that leads to facilitate access to justice. Therefore, the researcher found that Jordanian judicial system doesn't prevent applying forensic linguistics in Jordanian courts and benefit from its advantages.

5.2 Discussion of the results related to the second question

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

There are two extremely 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 relate 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 Jordanian code of Criminal Procedure (1961)).

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.

5.2.1 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 of them 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 researcher conducted several interviews with the investigating officers of the unit, as the interviews showed that there are 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 provide 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 (2011) study indicates that the forensic linguist is able to 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.

5.2.2 Spoken linguistic evidence

It should be noted that forensic linguistics overlaps with forensic phonetics when a 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 able to apply its various techniques and theories. The research studies showed that cases which 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.

With regard to 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 convincing explanations 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 the 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.

5.3 Discussion of the results related to the third question

What is the importance of applying forensic linguistics in Jordanian courts?

The results related to the importance of applying forensic linguistics showed the need for Jordanian courts for the presence of forensic linguists to deal with various written and spoken linguistic evidence. This means that there is a gap regarding how the various linguistic evidence is handled currently. The results related to the benefits of the application of forensic linguistics are discussed through the following themes:

5.3.1 Acquisition of knowledge of forensic linguistics

Activating the role of forensic linguists in Jordanian courts, practicing their work on a daily basis in various courts, and applying their linguistic knowledge about various forms of linguistic evidence will contribute to enriching the linguistic knowledge of legal professionals. It will provide an opportunity for linguists to practice and apply their linguistic knowledge in

Jordanian courts. In addition, it will provide an opportunity for both legal professionals and linguists to exchange experiences and knowledge; and thus, contribute to enhancing the process of legal analysis of linguistic evidence. On the other hand, applying forensic linguistics will strengthen the argument of linguistic evidence and give it more importance and weight. Also, the reports submitted by forensic linguists will be convincing and scientifically acceptable, therefore this will contribute to saving time and effort.

As for the conduct of the investigative process, the presence of forensic linguists within the investigation teams and work collaboratively with the investigation teams will contribute significantly to directing the investigation towards the right track, and thus will help save time, effort and enrich investigation teams' knowledge. The results showed the participants' desire to learn forensic linguistics because it has a great benefit that will be reflected in the development of their performance as legal professionals. This is completely harmonious with Olsson's (2004) study in which he identified the target group should learn forensic linguistics starting from law students, investigative police officers, lawyers ranging from solicitor to senior barrister, forensic handwriting analysts, magistrates, and judges.

5.3.2 Creating a common ground that brings linguists together with legal professionals

Although language and law cannot be separated, there is no common factor that brings legal professionals together with linguists to work collaboratively on matters related to crimes and illegal acts in situations where language can be considered evidence in Jordanian courts. The results analysis revealed that there is no link between legal knowledge and linguistic knowledge, which consequently led to the emergence of a judicial gap represented by the absence of an expert specialized in dealing with written and spoken linguistic evidence in Jordanian criminal and civil courts, able to examine these evidence, and able to provide an acceptable and convincing experience report based on scientific linguistic bases and principles.

The application of forensic linguistics will gradually reduce this distance between legal professionals and linguists, and help to form common ground. This corresponds to the study of Coulthard et al (2011) which emphasizes the importance of having a link between the two sides. What is meant by common ground here is the overlap between legal knowledge and linguistic knowledge and how to utilize it to deal with any case in which language can be considered an evidence. In order to identify and punish the perpetrators to achieve public and private deterrence. When applying forensic linguistics, legal and linguistic researchers will begin to conduct research studies on this topic. Also, many workshops, seminars, internal and external conferences can be held that will contribute significantly to the spreading of knowledge, discuss challenges, and exchange experiences related to forensic linguistics and the importance of its application.

5.3.3 Applying forensic linguistics in cybercrimes

The re-amendment to the Cybercrime Law, which consists of criminalizing some acts contrary to the law and increasing the penalties against the perpetrators, is clear evidence of the increase in the percentage of cybercrime cases being investigated in the Jordanian criminal and civil courts. The results showed that there are many ways to manipulate written electronic texts and audio recordings that people resort to avoid punishment and legal accountability. This is proof that there is no scientific linguistic means of proof applied in Jordanian courts capable of examining and analyzing written and spoken linguistic texts that are being manipulated linguistically. This can be applied through the presence of a forensic linguist whose opinion is sought by the court, able to submit a cogent report proving this manipulation and provide logical linguistic explanations of what is meant by these texts. All this will have a positive effect by helping the judge to make the appropriate decision.

5.4 Conclusions

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 prevent 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 these 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 to examine and analyze linguistic evidence in Jordanian courts do not have the ability to deal with manipulated texts, or written or spoken texts other than Arabic.

The results showed that the failure to apply forensic linguistics in Jordanian courts as an investigative and evidentiary tool of linguistic evidence has weakened these evidences and made it lose its legal weight in the conviction and proving the identity of the accused. Therefore, this legal gap puts judges in front of one of the following options: either to judge on the linguistic evidence based on personal conviction, or to consider it an incomplete presumption and search for other evidence supporting this linguistic evidence (unless it points directly to the author of the text, whether written or spoken), and this needs more time and effort.

The results related to the importance of applying forensic linguistics emphasize the need of Jordanian courts for the presence of forensic linguists to deal with various written and spoken linguistic evidence. Activating the role of forensic linguists in Jordanian courts, practicing their linguistic knowledge on a daily basis in various courts, will contribute to enriching the linguistic knowledge of legal professionals. It will provide an opportunity to exchange experiences and knowledge; thus, contributing to the strengthening of the process of legal analysis of linguistic evidence. On the other hand, the reports provided by these legitimate linguists will be convincing and scientifically acceptable; therefore, this will contribute to saving time and effort.

5.5 Recommendations

Since the Jordanian law is clear, comprehensive and flexible, there is nothing in it that prevents the acceptance of any new method of proof or scientific means that contribute to uncovering the circumstances surrounding legal cases, reaching the truth and achieving justice. From this point of view, the researcher recommends that the methods of investigation and tools of proof used in Jordanian courts should be reconsidered with regard to written and spoken linguistic evidence. The application of forensic linguistics in the Jordanian judicial system should be given priority and high attention at all levels.

The researcher suggests that the plan of applying forensic linguistics in the Jordanian judicial system should be planned in short and long terms. In the short term, the focus should be on creating awareness among linguists and legal professionals about what forensic linguistics is. In this context, it should be noted that the responsibility lies mainly on the shoulders of linguistic and legal researchers and academics. They should cooperate to create a comprehensive knowledge database of everything related to this science by translating books of forensic linguistics from foreign languages to Arabic, and start implementing research studies. After that, the transition to the second stage will take place, where linguistic and legal

academics should present forensic linguistics to legal professionals working within the framework of the Jordanian judiciary. After that, feedback, suggestions, and recommendations should be compiled, thoroughly studied, analyzed, and then compared according to the database.

It is very important to constantly refine and filter the knowledge database. After spreading awareness about what forensic linguistics is, the researcher recommends starting teaching the subject of forensic linguistics at the university level for law and linguistics students to ensure that when they move from the learning stage to the practical stage, they will have sufficient basic knowledge of what forensic linguistics is, and how forensic linguists can utilize their linguistic knowledge to analyze and examine the various types of linguistic evidence.

In the long term, the mechanism of applying forensic linguistics in Jordanian courts should be studied and discussed. A comprehensive study should be submitted to the Directorate of expertise in the Jordanian Ministry of justice, and obtain the approval of the minister of Justice. When approved, the second stage is to develop the foundations and criteria that must be met by the forensic linguist as an accredited expert. In addition to establishing conditions and criteria for accepting the forensic linguist's report in court. At the third stage, the classification of linguistic evidence should be reconsidered, and all matters related to language within the legal context.

After applying forensic linguistics in Jordanian criminal and civil courts, it must be followed up continuously. In this context, the researcher recommends that a syndicate of forensic linguists be established to gather them from time to time so they can exchange experiences and discuss the challenges they might face in courts. The researcher also suggests that the focus should be on holding internal and external workshops and conferences involving linguists and legal professionals to exchange experiences, discuss aspects of cooperation,

discuss challenges, discuss the impact of technological development and artificial intelligence on linguistic evidence and suggest solutions. In addition to provide recommendations and suggestions that contribute to the development of forensic linguistics in the future.

5.6 Summary

In this chapter, the importance and relevance of the results were presented by providing an explanation and evaluation of what the researcher found. The extent to which the results correlate with literary reviews related to the application of forensic linguistics has also been shown. In addition, the conclusions reached by the researcher were presented through the discussion of the results. Finally, important recommendations were made for the application of forensic linguistics in Jordanian courts, as well as recommendations related to future research on this topic.

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Appendix

Appendix A: The main and sub-questions that the researcher addressed to the participants during the interviews

Questions related to the first question of the study <i>To what extent is forensic linguistics applied in the Jordanian judicial system?</i>	
1	AR: هل أن مصطلح علم اللغة الجنائي مألوف بالنسبة لك؟ EN: Is the term forensic linguistics familiar to you?
2	AR: هل يوجد في المحاكم الأردنية علمٌ مُحدّدٌ معنويّ بفحص، تحليل أو التحقيق في الأدلّة اللغويّة المرتبطة بالقضايا المنظورة لدى المحاكم الأردنيّة؟ EN: Is there a specific science concerned with examining, analyzing, or investigating judicial texts related to cases in Jordanian courts?
3	AR: ما هو مصدر المعرفة المتعلقة باللغة لخبراء تحليل خط اليد؟ AN: What is the source of language-related knowledge for handwriting analysis experts?
4	AR: ما هي المبادئ العلميّة التي يبني عليها خبير تحليل خط اليد فرضياته، وكيف يتمّ اختبار هذه الفرضيات وإثباتها؟ EN: What scientific principles does a handwriting analysis expert base his hypotheses on, and how are these hypotheses tested and proven?
5	AR: هل يستطيع خبير تحليل خط اليد أن يتعامل مع النصوص المطبوعة على ورق، أو النصوص الإلكترونيّة (مثل الرسائل النصيّة الهاتفية والإيميلات)؟ EN: Can a handwriting analysis expert deal with printed texts on papers, or electronic written texts (such as SMS phone messages and emails)?
6	AR: هل يقيد النظام القضائي الأردني طرق الإثبات والوسائل العلميّة المعتمدة في المحكمة؟ EN: Does the Jordanian judicial system restrict the methods of proof and scientific means approved in the court?

Questions related to the second question of the study	
<i>What is the mechanism used in Jordanian courts to investigate and proof linguistic evidence, and how are language-related cases handled?</i>	
1	<p>AR: ما هو أوّل إجراءٍ يقومُ به خبيرُ تحليلِ خطِّ اليدِ عندما يُطلبُ منه فَحصُ نصِّ لغويٍّ مكتوبٍ بخطِّ اليدِ؟</p> <p>EN: What is the first action performed by the handwriting analysis expert when he is asked to examine a handwritten linguistic text?</p>
2	<p>AR: هل يجبُ على القاضي الإلتزامُ بنتائجِ تقريرِ الخبيرِ الذي فَحصَ وحلَّلَ الدليلَ اللغويَّ سواءً كانَ مكتوباً أو منطوقاً من حيثُ الحكمِ بإدانةِ المتَّهمِ أو تبرئتهِ؟</p> <p>EN: 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?</p>
3	<p>AR: كيفَ يقومُ خبيرُ تحليلِ خطِّ اليدِ بفحصِ وتحليلِ النصِّ اللغويِّ المطبوعِ؟</p> <p>EN: How does handwriting analysis expert examine and analyze the printed linguistic text?</p>
4	<p>AR: من هو المسؤولُ عن التعاملِ مع الجرائمِ الإلكترونيَّةِ التي تكوُنُ فيها الأدلَّةُ اللغويَّةُ الإلكترونيَّةُ مصدرَ التَّحقيقِ؟</p> <p>EN: Who is responsible for dealing with cybercrimes in which electronic linguistic evidence is the source of the investigation?</p>
5	<p>AR: في حالٍ لم يتركِ الجاني أيَّ بصماتٍ أصابعٍ أو أيِّ دليلٍ بخلافِ بعضِ رسائلٍ مكتوبةٍ مُرسلةٍ من الهاتفِ المَحمولِ للضحيةِ، فكيفَ يُمكنُ لضباطِ التَّحقيقِ التَّعرُّفُ على مؤلِّفِ النُّصوصِ؟ (سؤالٌ موجَّهٌ لضباطِ التَّحقيقِ)</p> <p>EN: 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? (A question addressed to the investigating officers)</p>
6	<p>AR: كيفَ يتعاملُ المحترفينَ القانونيونَ، الذينَ يعملونَ في المحكمةِ، معَ الأدلَّةِ اللغويَّةِ المنطوقَةِ مجهولةِ المصدرِ؟</p> <p>EN: How do legal professionals, who work in the court, deal with anonymous spoken linguistic evidence?</p>
7	<p>AR: ما هي المؤهلاتُ العلميَّةُ التي يجبُ أن يملكها خبيرُ الصَّوتياتِ ليعملَ كخبيرٍ تمييزِ المُتحدِّثِ؟</p> <p>EN: What are the scientific qualifications that a phonetics expert must have to work as a speaker recognition expert?</p>

Questions related to the third question of the study <i>What is the importance of applying forensic linguistics in Jordanian courts?</i>	
1	AR: هل تعتقد بأن المحترفين القانونيين بحاجة إلى إكتساب معرفة بعلم اللغة الجنائي؟ EN: Do you think that legal professionals need to acquire knowledge of forensic linguistics?
2	AR: هل تمتلك القدرة على فحص وتحليل الأدلة اللغوية بطريقة لغوية؟ (سؤال موجّه للمحترفين القانونيين) EN: Do you have the ability to examine and analyze linguistic evidence linguistically? (A question addressed to legal professionals)
3	AR: هل تستطيع أن تستخدم معرفتك اللغوية في فحص وتحليل الأدلة اللغوية، والتحقيق في النصوص القانونية؟ (سؤال موجّه للغويين) EN: Can you utilize your linguistic knowledge to examine and analyze linguistic evidence and investigate judicial texts? (A question addressed to linguists)
4	AR: كيف من الممكن خلق جسر تعاون بين اللغويين و المحترفين القانونيين من أجل تطبيق علم اللغة الجنائي في النظام القضائي الأردني؟ EN: How is it possible to create a bridge of cooperation between linguists and legal professionals, in order to apply forensic linguistics in the Jordanian judicial system?
5	AR: هل تعتقد أنّ وجود خبير لغوي جنائي في المحاكم الأردنية قادراً على فحص وتحليل النصوص المكتوبة والمنطوقة المتعلقة بالجرائم الإلكترونية سيكون مفيداً؟ EN: Do you think that having a forensic linguist who is able to examine and analyze written and spoken texts related to cybercrime cases, in Jordanian courts, will be useful?
6	AR: ما هو المقصود بالتلاعب باللغة، وكيف يتم كشف ذلك والتعامل معه؟ EN: What is meant by language manipulation, and how is it detected and dealt with?