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Modality in Modern Standard Arabic: Hierarchical Structure and Complement Selection

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Abstract—**This study provides a syntactic analysis of modality in Modern Standard Arabic, distinguishing between epistemic and deontic/root modals and examining their structural properties within the framework of Cinque's (1999) hierarchy of modal heads. Using a corpus-based approach, this study analyzes how modality is marked in Arabic, which types of modals occupy higher syntactic positions, and the kinds of complements they select. The findings reveal that Arabic modals include verbs (e.g., *yajib* "must", *yumkin* "may"), prepositional phrases (*mina al-dˤaruwrii* "necessary"), particles (*qad*, *rubbama*), and prepositions (*ʕala*, *al-lam*). Epistemic modality, in particular, can be expressed through modal verbs such as yumkin "may" and yuħtamal "might"; prepositional phrases such as *mina al-muʔakkadi* "certainly" and *mina al-muħtamali* "likely"; and particles (*qad* + perfective), (*qad* + imperfective), *rubbama* "perhaps", and the verb *yabdu* "seem". The data confirm that epistemic modals occupy a structurally higher position than deontic modals, consistent with cross-linguistic typological trends. Additionally, modal verbs predominantly select complementizer phrase (CP) complements (e.g., *ʔan* + verb phrase (VP)) over noun phrase (NP) complements, indicating a syntactic preference that contrasts with that in English. The results indicate that Arabic aligns with Cinque's hierarchy, with obligation modals (e.g., *yajib* "must") ranking higher than ability/permission modals (e.g., *yaqdir* "can").**

Index Terms—**epistemic modality, deontic modality, Cinque's hierarchy, complement selection**

I. Introduction

There is a difference between root/deontic modality and epistemic modality. For instance, Whaley (1996) points out that deontic modality deals with obligation or desire, whereas epistemic modality deals with degrees of possibility. Furthermore, Palmer (2001) describes the difference as follows: "epistemic modality is concerned solely with the speaker's attitude to the truth value or factual status of the proposition (propositional modality), whereas deontic and dynamic modality refers to events that are not actualized, events that have not taken place but are merely potential (event modality)" (p. 86).

Building on this foundational understanding of modality, this study narrows its focus to investigate its unique manifestations and structures within Modern Standard Arabic (MSA). The main research questions are the following: (1) How does MSA mark the use of modality? (2) Which Arabic modals are higher in the structure, root/deontic or epistemic ones? (3) Does Arabic display a fixed order among its modals similar to Cinque's (1999) hierarchy of modal heads? (4) What types of complements come after a modal in Arabic? A CP, an NP, or a VP? Which type is more frequent?

In addressing these questions, this study also offers a comparative perspective with English modal verbs to highlight cross-linguistic variation in agreement inflection, aspectual behavior, modal scope, and complement selection. The goal is to situate Arabic within broader typological and theoretical discussions of modality while accounting for language-specific patterns. This study demonstrates that MSA employs a unique hierarchical structure in modality expression that aligns with Cinque's (1999) hierarchy, revealing a preference for CP rather than NP complements.

The study begins by examining Arabic root/deontic modal verbs such as *yajib* "must", *yanbaʕi* "must", *yattaħatam* "must", *yastatˤiʕ* "can", *yaqdir* "can", and *yumkin* "may". It then explores the expression of root modality through adverbial prepositional phrases like *mina al-dˤaruwrii* "necessary", as well as particles *sa-* and *sawfa*, and prepositions *ʕala* "on" and *al-lam* "to". Finally, the study delves into the use of epistemic modality in Arabic, including epistemic modal verbs such as *yumkin* "may", *yuħtamal* "might", and *yabdu* "seem", along with prepositional phrases *like mina al-muʔakkadi* "certainly" and *mina al-muħtamali* "likely", the particle (*qad* + perfective), the particle (*qad* + imperfective), and the particle *rubbama* "perhaps".

The remainder of this paper is organized as follows. Section II offers a literature review of modality. Part A delves into the definition of modality, distinguishing it from other grammatical categories such as tense and aspect, and explores the three subtypes of modality: epistemic, deontic, and dynamic. Part B examines the literature on English modals to facilitate a later comparison with their Arabic counterparts. Part C addresses modality in Arabic and analyses proposed for Arabic modal constructions. Having established a theoretical framework for modality in both English and Arabic, Section III details the methodology employed to empirically investigate these modal structures in Arabic. Section III outlines the data collection methods used in this study. Section IV presents the data used in this study. Section V discusses the results and interprets the findings. Section VI concludes the paper by summarizing key insights.

II. Modality

A. Modality

Modality has been defined by Quirk et al. (1985, p. 219) as the "manner in which the meaning of a clause is qualified to reflect the speaker's judgment of the likelihood of the proposition it expresses being true." Palmer (2001) puts the difference between tense, aspect, and modality as follows: "Modality differs from tense and aspect in that it does not refer directly to any characteristic of the event, but simply to the status of the proposition" (p. 1).

Palmer (1990) distinguishes three subtypes of modality: epistemic, deontic (discourse-oriented), and dynamic (subject-oriented). Epistemic modality "essentially.... [makes] a judgment about the truth of the proposition" (1990, p. 6). Dynamic modality is "concerned with the ability and volition of the subject of the sentence" (1990, p. 7). Therefore, it is "subject-oriented in the sense that it is concerned with the ability or volition of the subject of the sentence rather than the opinions (epistemic) or attitudes (deontic) of the speaker (and addressee)" (Palmer, 1990, p. 36). Deontic modality is "concerned with influencing actions, states. or events" (1990, p. 6).

Palmer (2001) describes two ways in which languages mark modality: (1) modal system and (2) mood. Both ways may coexist in the same language. For instance, a language like German employs both modal verbs and mood (indicative and subjunctive). However, many other languages tend to favor one over the other. For example, English has largely abandoned the use of the subjunctive mood and instead developed a modal system based on modal verbs.

Mood is encoded within the tense phrase (TP) along with tense, aspect, and agreement. Accordingly, the TP can be analyzed as comprising T (tense), M (mood), and ASP (aspect), with agreement located in T (Van Gelderen, 2017, p. 73).

B. Modals in English

Modals in English do not inflect for person, number, or tense, yet they are finite. Consequently, they can be placed in T. They express events that have not yet been realized and are therefore considered irrealis, that is, they express the future tense. In English, if there are more than one verb in a sentence, modals are placed first, that is, before other verbs. Therefore, (1a) is considered grammatical, whereas (1b) is not.

(1) a. He may be arriving late.
b. *He has mayed arrive late. (Van Gelderen, 2017, p. 73)

There are two types of modals: root (deontic) and epistemic, as shown in (2).

(2)

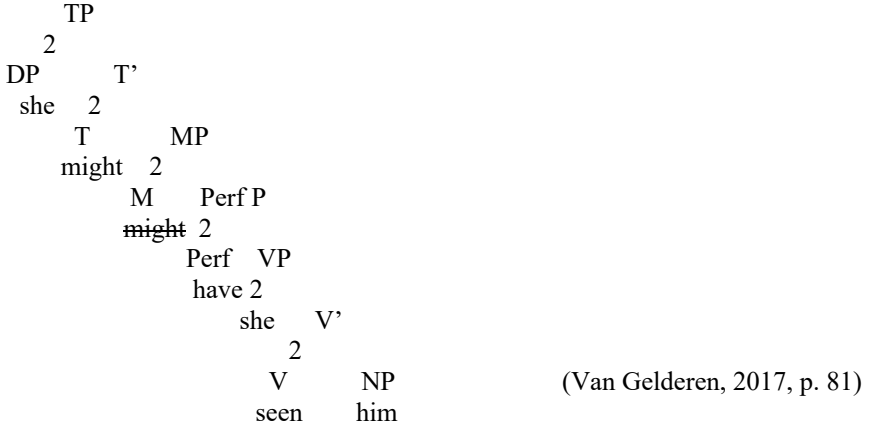
Root/deontic	**Epistemic**
You may go.	It might rain.
I could speak French once.	He could have left already.
You must go.	Zoya must have done that. (Van Gelderen, 2017, p. 80)

Root/deontic modals express meanings such as ability, permission, or obligation, whereas epistemic modals entail meanings such as possibility and likelihood (Van Gelderen 2017, p. 80). An interesting structural difference between epistemic and deontic modals is that an activity verb can follow the deontic modal and cannot be followed by another auxiliary, as in (3), whereas the epistemic modal can, as in (4):

(3) You must go. deontic
(4) He must have gone. epistemic (Van Gelderen, 2017, p. 81)

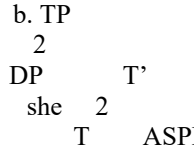
Therefore, epistemic modals are supposed to be higher in the tree, in M as in (5a), than deontic ones, which could be a light verb or ASP head, as in (5b). Both epistemic and deontic modals can move to T because they are considered finite. Since epistemic modality is higher, it can be followed by an aspectual auxiliary such as "have" in (5a).

(5) a.



(Van Gelderen, 2017, p. 81)

b.



must 2
ASP VP
~~must~~ 1
V
go

(Van Gelderen, 2017, p. 81)

Examples (3) and (4) above show that the exact modal in English can have both epistemic and deontic meanings, depending on the context. The deontic meaning is more verb-like and connected to the TP layer, whereas the epistemic use is more T-like and connected to the TP layer (Van Gelderen, 2013, p. 191).

Modals in English may include core modals, as in (6a), semi-modals, as in (6b), and modal adverbs, as in (6c).

(6) a. may, might, can, could, will, would, shall, should, must.
b. ought to, have to (hafta), going to (gonna), want to (wanna).
c. probably, possibly, maybe, perhaps, potentially, likely (Van Gelderen, 2017, p. 78).

Cinque (1999) explains that "the traditional interpretive distinction between the epistemic and root (uses of) modals correlates with a structural distinction" (p. 78). Therefore, epistemic modals are located higher in the clause than deontic/root modals (p. 78). He states that "English multiple modal varieties" (p. 80) are not clear on whether all root modals are located in the same position in the functional part of the clause. However, in other languages, they appear to have a "fixed relative scope" among each other (p. 81). Therefore, he suggests a hierarchy of modal heads, as shown in (7).

(7) Mod epistemic > Mod necessity > Mod possibility > Mod volition > Mod obligation > Mod ability/permission (Cinque, 1999, p. 81).

C. Modality in Modern Standard Arabic

Soltan (2006) states that verbs expressing deontic modality in Standard Arabic, such as yajibu, yanbaɣii, and *yataħattam*, select a PP for their experiencer argument. Furthermore, he points out that the modal verb *yajib* appears in the same form regardless of the gender category of "the DP inside the experiencer PP argument" (p. 13), as shown in example (8a) from Soltan (2006, p. 13).

(8) a. ʔal-ʔawlaad-u yajib-u ʔalay-him ər-rahiil-u
the-boys-NOM must-3sgmas on-them the-leaving-NOM
"The boys have to leave."
b. *ʔal-ʔawlaad-u yajib-uuna ʔalay-him ər-rahiil-u
the-boys-NOM must-3plmas on-them the-leaving-NOM
"The boys have to leave."

Sentence (8b) is ungrammatical because the modal verb *yajib* is invariant in terms of agreement; therefore, it does not inflect for person, number, or gender.

Moshref (2012) gives examples of common epistemic modals in MSA: *mina al-lazim* and *la-budda* "must", *mina al-muʔakkad* "certainty", *qad* + PRF "indeed", *mina al-mumkin* "possibly", *rubbama* "perhaps", *qad* + IMP "maybe", *yabdu* "it seems", and *aʔ-ðˁun* "I think". According to her, epistemic modality can be expressed through verbs, phrases and particles. Additionally, she points out that "Arabic uses lexical verbs or participles that mean can/able to, e.g., [yaqdir] and [yastatˁiʕ] in MSA" (p. 122). The majority of deontic modals in MSA are imperatives and imperfectives. Modal particles like *hayya/yalla* "let's" precede imperfectives, as in (9).

(9) layta-hu safar-a /yu-safir-u
wish-3sg.M travel.PRF-3sg.M /3sg.M-travel.IMP-IND
"I wish he traveled/I hope he travels." (Moshref, 2012, p. 124)

According to As-Safi (2001), modality in Arabic extends beyond traditional modal verbs alone. It includes auxiliary verbs that express proximation and commencement, such as *kaada* and *awshaka* (which both mean "be about to"), and verbs of initiation, such as *sharaʔa*, *jaʔala*, *akhadha*, and *qaama* (which all mean "started"). Furthermore, he highlights that modality can be lexicalized through finite verbs such as *yajuuzu* "may" and *yastatˁiʕu* "can". He adds that modality in Arabic is not restricted to verbs but can also be expressed through adverbs, such as *abadan* "absolutely", and particles, such as *qad* "may" and *qat* "never". Even prepositions, such as *ʕala* "on" and *al-lam* "for", can carry modal meanings in specific contexts.

Alharbi (2002, p. 9) classifies verbal modals in Arabic into the following key categories:

(10) a. (*yuriid/ araad*) "want"
b. (*yastatiiʕ/ istataʕ*) and (*yaqdir/ qad*ir) "can/could"
c. (*yimkin/ mumkin/ yuhtamal/ muhtamal/ qad*) "may/might"
d. (*jaayiz/ yajuuz/ yastahiil/ mustahiil*) "can/ could be/ possible/impossible"
e. (*sawfa*) and (*sa-*) "will/ be going to"
f. (*yanbaghi/yajib/ labud*) "should/must/ought to"
g. (*yalzam/ laazim*) "should/ have to"

Alharbi (2002) asserts that Arabic verbal modals share these fundamental properties. First, they express a range of modal meanings, including possibility, ability, obligation, and intention. Second, they take "verbal expressions" as their complement (p. 3). Furthermore, he argues that not all Arabic modals occupy the same syntactic position in the clause

structure. While some modals originate in the mood phrase (MP), others are positioned above or below the TP. This structural variation suggests that modality interacts closely with tense and aspect in Arabic syntax.

Cross-linguistically, modal verbs often serve both epistemic and deontic/root functions, with context playing a crucial role in determining their interpretation (Cinque, 1999; Palmar, 1991; Picallo, 1990). For example, in (11), the Catalan modal *poder* "may/can" can be interpreted differently in (12a) and (12b) (Picallo, 1990, p. 288).

(11) El lladre pogue entrar per la finestra
the thief could come in by the window

(12) a. It is possible that the thief came in by the window. (epistemic)
b. The thief was able to come in by the window. (root/deontic)

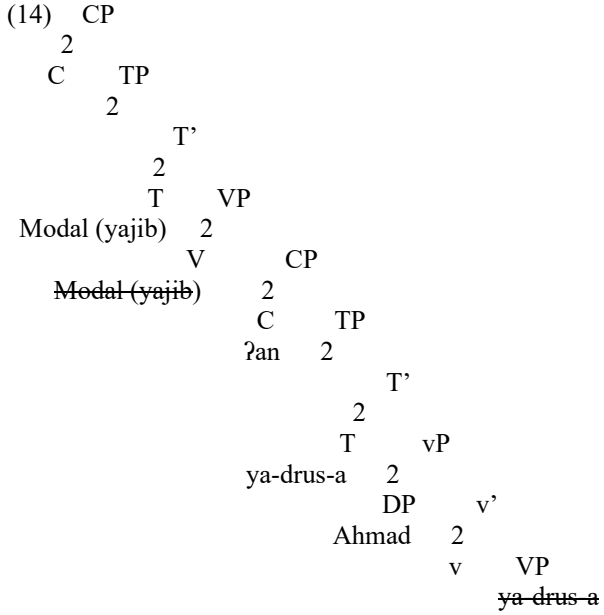
Modal verbs have been analyzed cross-linguistically as restructuring verbs. Restructuring constructions are defined as "infinitival constructions which are characterized by the lack of clause-boundedness effects (in languages in which infinitives otherwise show clausal behavior)" (Wurmbrand, 2004, p. 991). This phenomenon is widely attested in languages such as Italian, German, French, Spanish, Dutch, and English.

Furthermore, Cinque (2006) argues that modals, aspectual verbs, and motion verbs are among the most common restructuring verbs across languages. He notes:

> Numerous analyses have been proposed to explain why certain phenomena that are otherwise clause-bound (such as Clitic Placement) appear to be able to span over two clauses when the matrix verb is either a modal, an aspectual, or a motion verb and the complement is nonfinite. (Cinque, 2006, p. 11)

Arab linguists (e.g., Aoun et al., 2000; Fehri, 2012; Mohammad, 2000) pursue a bi-clausal approach to modality in Arabic. In this analysis, the head *ʔan* in (13) is classified as a complementizer (C) head. Therefore, any Arabic modal structure has two CPs, as shown in (14).

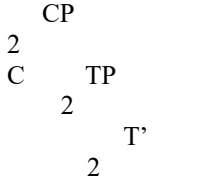
(13) Yajib-u ʔan ya-drus-a Ahmad-un
must-IND that 3S.M-study-SBJ Ahmad-NOM
"Ahmad must study."

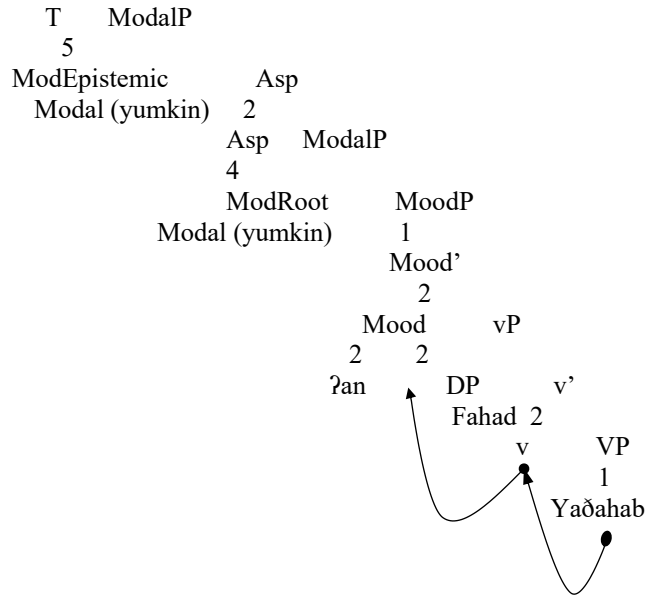
(14)


Albaty (2019) challenges this perspective, arguing that modal verbs in MSA behave as restructuring verbs and should instead be analyzed as monoclausal structures. He proposes that modal verbs function as matrix verbs embedding a nonfinite phrase, with both verbs sharing a single syntactic projection (one CP, TP and vP). A key component of this argument is that *ʔan*, as seen in (15), should not be treated as a complementizer (C) head, but rather as a mood head, because it does not exhibit the typical characteristics of complementizers.

(15) Yumkin-u ʔan yaðhab-a Fahad-un
may-IND SM (Subjunctive Marker) 3S.M-go-SBJ Fahad-NOM
"Fahad may leave." (Albaty, 2019, p. 44)

Tree (16) shows the monoclausal structure proposed by Albaty (2019, p. 44).

(16)




This study adopts the bi-clausal approach to modality in Arabic for two key reasons. First, it is supported by a broader body of linguistic research (e.g., Aoun et al., 2000; Fehri, 2012; Mahmood, 2000). Second, the monoclausal restructuring hypothesis remains underdeveloped, with Albaty (2019) as its primary proponent. Although Albaty's analysis offers a noteworthy syntactic simplification, it lacks sufficient empirical support. Until further research provides stronger supporting evidence, the bi-clausal framework remains the more theoretically robust approach.

III. Data Collection Methodology

The data and examples in this study were collected from ArabiCorpus (http://arabicorpus.byu.edu), a corpus developed by Dilworth B. Parkinson at Brigham Young University. The corpus comprises approximately 173.6 million words, most of which are sourced from newspapers. Additionally, it includes a diverse range of texts such as premodern Arabic literature, modern fiction, and nonfiction.

To extract modal verb occurrences, forms such as *yajibu, yanbaɣi*, etc. were searched using their corresponding perfective forms (*wajaba*, *inbaɣa,* …etc.) in order to capture both perfective and imperfective instances. Examples were primarily drawn from the first page of the search results, which typically displayed 100 entries. In cases where a search (e.g., for *wajaba*) returned unrelated instances, irrelevant examples were manually excluded, and additional pages of the results were reviewed to ensure accuracy of the data.

To examine the syntactic behavior of modals, the "collocation" section in ArabiCorpus was consulted to identify common syntactic structures following modal verbs, such as (modal + CP), (modal + PP), or other patterns.

IV. Data

The examples analyzed in this study were mainly collected from ArabiCorpus. Tables 1 and 2 present the Arabic deontic/root modal verbs, their total number of occurrences, and the types of complements they select. An analysis of Arabic deontic/root modal verbs (summarized in Tables 1 and 2) highlights their frequency of occurrence and complement selection, underscoring syntactic preferences unique to Arabic modality.

Table 1
Deontic/Root Modals That Can Take Both a CP and an NP Complement

The deontic/root modal	Total number of occurrences	Modal + CP (e.g., example (13))	Modal + NP (e.g., example (8))
Yajib	105,339	44,060	15,998
yanbaɣi	30,368	16,177	5,204
yataħattam	1,374	378	355
yastatˁiʕ	95,314	42,779	8,041
yaqdir	75,913	21,482	6,432
Yumkin	191,755	98,631	18,982
mina al-dˁaruwri	4,134	2,485	775

Table 2
Deontic/Root Modals That Can Be Followed by a CP Only or a VP

The deontic/root modal	Total number of occurrences
ʕala (ʕalayka ʔan) → (PP+CP)	22,895
al-lam (Laka ʔan) → (PP+CP)	2,549
Sawfa + VP	49,939

Table 3 presents the corresponding analysis of epistemic modal verbs, including their frequencies and the types of complements with which they occur.

TABLE 3
EPISTEMIC MODALS IN ARABIC AND THEIR TOTAL NUMBER OF OCCURRENCES

The epistemic modal	Total number of occurrences	Modal+ CP	Modal+NP
Yumkin	191,755	98,631	18,982
Yuħtamal	3,802	2.981	343
Yabdo	137,285	48,030	N.A.
mina al-muʔakkadi	3,491	3,200	34
mina al-muħtamali	7	7	0
Rubbama	63,722	391	VP= 10,268
Qad	303	Qad+PERF=215	Qad+IMP= 27

V. RESULTS AND DISCUSSION

A. Root/Deontic Modality in Arabic

The deontic modal verbs in Arabic include *yajib* "must", *yanbaɣi* "must", *yataħattam* "must", *yastatˁiʕ* "can", *yaqidr* "can", and *yumkin* "may". When compared to English modal verbs, certain distinctions become apparent. For instance, English modals do not exhibit inflection for person, number, or tense (e.g., He must NOT he musts). Conversely, the Arabic deontic modal verbs *yajibu* "must", *yanbaɣi* "must", *yataħattam* "must", and *yumkin* "may" inflect for tense but not for person, number, or gender. In contrast, *yastatˁiʕ* "can" and *yaqidr* "can" inflect for tense, person, number, and gender. Table 4 provides a summary of Arabic deontic modal verbs and their tense inflections.

TABLE 4
ARABIC DEONTIC MODAL VERBS AND THEIR TENSE INFLECTION

Present	Past	Future
yajib	wajab-a	sa-yajibu
yanbaɣi	inbaɣ-a	sa-yanbaɣi, awfa-yanbaɣi
yataħattam	taħattam-a	sa-yataħattam sawfa-yataħattam
yastatˁīʕ	istatˁaʕ-a	sa-yastatˁiʕu sawfa-yastatˁiʕu
yumkin	amkan-a	sa-yumkinu sawfa- yumkinu
yaqdir	qadir-a	sa-yaqdiru sawfa-yaqdiru

For example, the modal *yataħattam* "must" inflects for tense but not for person or number, as in (17).

(17) yataħattam-u ʔan ya-kun-aa maʕa-an
must-IND that 3S.M-be-daul.M together-ACC
"They must be together."

However, sentence (18) is ungrammatical because deontic modals in Arabic do not inflect for number.

(18) *yataħattam-an ʔan ya-kun-aa maʕa-an
must-dual that 3S.M-be-daul.M together-ACC
"They must be together."

The deontic modals *yastatˁiʕ* "can" and *yaqidr* "can" inflect for agreement fully and partially depending on the word order, that is, whether it is SVO or VSO. For example, the modal *yastatˁiʕ* "can" partially inflects for agreement when the word order is VSO, as in (19), and fully inflects for agreement when the word order is SVO, as in (20).

(19) *ya/ta-statˁiʕ-u al-fatat-u ʔan ta-qraʔ-a al-dars-a (VSO= partial agreement)
3S.M/3S.F-can-IND the-girl-NOM that 3S.F-read-SBJ the-lesson-ACC
"The girl can read the lesson."

(20) Al-tˁulab-u ya-statˁiʕ-u-un ʔan ya-qraʔ-u-∅ (SVO=full agreement)
The-students-NOM 3PL.M-can-IND-PL.M that 3PL.M-read-PL.M-SBJ
"The students can read."

Similarly, *yaqidr* "can" inflects for agreement partially, as in (21), and entirely, as in (22).

(21) *ya/ta-qidr-u Mona ʔan ta-lʕab-a (VSO= partial agreement)
3S.M/3S.F-can-IND Mona that 3S.F-play.SBJ
"Mona can play."

(22) Al-tˁalib-at-u ya-qidr-na ʔan ya-drus-na (SVO=full agreement)
The-students-PL.F-NOM 3PL.F-can-PL.F that 3PL.F-study-PL.F
"The students can study."

As in many other languages, some Arabic modal verbs can have both epistemic and deontic readings. For example, the modal *yumkin* "may" allows both interpretations, as in (23).

(23) Yumkin-u ʔan ya-taklam-a Zaid-un
may/might-IND that 3S.M-speak-SBJ Zaid-NOM
a. Zaid may speak (permission → root/deontic reading)
b. Zaid might speak (possibility → epistemic reading)

However, there is a way to get the root/deontic reading only, which is through adding a prepositional phrase (PP) after the modal verb, as in (24) and (25).

(24) Yumkin-u li-Zaid-in ʔan ya-taklam-a
Can-IND to-Zaid-GEN that 3S.M-speak-SBJ
"Zaid may speak." (permission → root/deontic reading)

(25) Yumkin-u li-Zaid-in al-kalam-u
Can-IND to-Zaid-GEN the-speech-NOM
"Zaid may speak." (permission → root/deontic reading)

Another characteristic of Arabic deontic/root modality is that only deontic/root modals *yajib* "must", *yanbaɣi* "must", *yataħattam* "must", *yastatˤiʕ* "can", *yaqidr* "can", and *yumkin* "may" can have perfective forms, as in examples (26), (27), and (28).

(26) Wajaba ʔan tu-rsil-a Layla al-risala-t-a al-youm-a
Must.PERF that 3S.F-send-SBJ Layla the-letter-F.S-ACC the-today-ACC
"Layla must send the letter today." (obligation → deontic/root reading)
*"Layla might send the letter today." (possibility→ epistemic reading)

(27) istatˤaʕa al-maridˤ-u ʔan ya-mʃi-a
can.PERF the-sick.man-NOM that 3S.M-walk-SBJ
"The sick man was able to walk." (ability → deontic/root reading)
*"The sick man might walk." (possibility→ epistemic reading)

(28) Amkana ʔan tu-safir-a Fatimat-un
Can.PERF that 3S.F-travel-SBJ Fatimah-NOM
"Fatimah was able to travel." (ability → deontic/root reading)
*"Fatimah may travel." (possibility→ epistemic reading)

Cross-linguistically, epistemic modals occupy a higher position in the structure than root modals. This holds true in Arabic as well, as shown in examples (29) and (30), where the epistemic modal *yumkin* "may" is higher than the root/deontic modals *yajib* "must" and *yataħattam* "must".

(29) Yumkin-u ʔan yajib-a ʔan tu-safir-a Mona
may-IND that must-SBJ that 3S.F-traverl-SBJ Mona
"Mona may have to travel."

(30) Yumkin-u ʔan yataħattam-a ʔan ya-truk-a al-tadxeen-a
may-IND that must-SBJ that 3S.M-quit-SBJ the-smoking-ACC
"He may have to quit smoking."

However, the reverse order is not allowed, as in (31) and (32).

(31) *Yajib-u ʔan yumkin-a ʔan tu-safir-a Mona
must-IND that may-SBJ that 3S.F-traverl-SBJ Mona
"Mona must may travel."

(32) *yataħattam-u ʔan yumkin-a ʔan ya-truk-a al-tadxeen-a
must-IND that may-SBJ that 3S.M-quit-SBJ the-smoking-ACC
"He must may quit smoking."

Additionally, in Cinque's (1999) hierarchy of modal heads, obligation ranks higher than ability/permission. Arabic conforms to this as well, as shown in (33), where the obligation modal *yajib* "must" appears higher than the ability/permission modal *yagdir* "can".

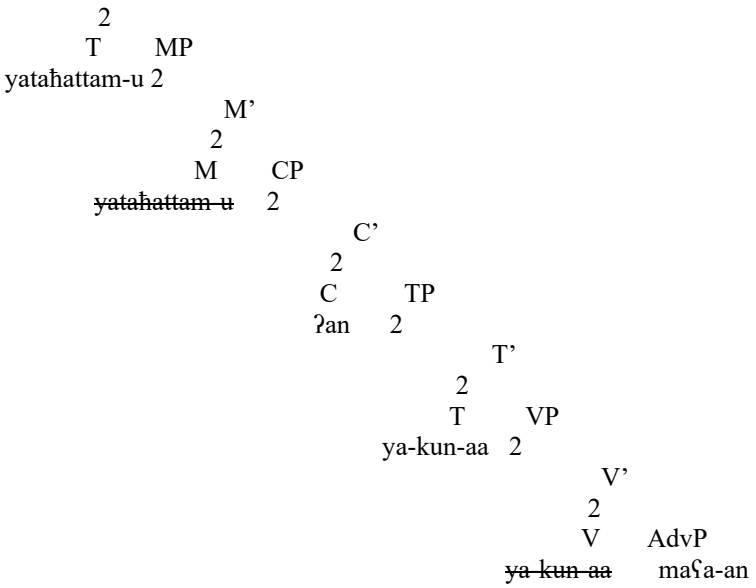
(33) Yajib-u ʔan ya-gdir-a ʔan ya-fˤal-a ðalik-a
Must-IND that 3S.M-can-SBJ that 3S.M-do-SBJ that-ACC
"He must be able to do that."

The reverse order is ungrammatical, as in (34).

(34) * Ya-gdir-u ʔan yajib-a ʔan ya-fˤal-aðalik-a
3S.M-can-IND that 3S.M-Must-SBJ that 3S.M-do-SBJ that-ACC
"He is able to must do that."

This study adopts a bi-clausal approach to Arabic modality. Therefore, a tree structure for a sentence like example (17) would look like (35).

(35) TP
2
T'



In tree (35), the modal *yataħattamu* is placed below the tense in its own layer, which is the mood phrase (MP). It then moves to T.

Another difference between English and Arabic lies in the structure of the complement that follows the modal verb. In English, a modal is followed by a verb in its base form (VP), as in (36).

(36) She may/can go now. (Palmer, 2001, p. 89)

However, the structure is different in Arabic. Different structures may follow a deontic modal. We may have (modal (PP) CP). For example, the verb *yajib* “must” occurred in the corpus, followed by a CP (*ʔan* + V) 44,060 times (41.8%), as shown in (37).

(37) Yajib-u ʕalay-ih-i ʔan ya-tasˁaruf-a bi-sorʕt-i
must-IND on-3S.M-GEN that 3S.M-take.action-SBJ with-quickly-GEN
“He has to take action quickly.”

Another structure that may occur with a modal verb is (modal + (PP) + NP). The verb *yajibu* “must” occurred in the corpus 105,339 times. It was followed by a (PP + NP) 15,998 times (15.2%) of the examples, as shown in (38).

(38) Yajib-u ʕalay-ih-i at-tasˁaruf-u bi-sorʕt-in
must-IND on-3S.M-GEN the-taking.action-NOM with-quickly-GEN
“He has to take action quickly.”

The PP can sometimes be deleted, and the structure can only be (Modal + NP), as in (39) and (40):

(39) Yajib-u tawaxi al-ħaðar-a
must-IND seek the-caution-ACC
“You must be careful.”

(40) yanbaɣi itqan-u al-ʕamal-i
must perfection-NOM the-work-GEN
“You should perfect your work.”

These percentages (41.8% vs. 15.2%) indicate that CPs are expected more than NPs after a modal verb in Arabic. This is because CPs include the subject of the sentence, whereas NPs may or may not include the subject. Therefore, to avoid ambiguity, modal verbs prefer to be followed by a CP. Similar to the modal verb *yajib* “must”, the modal verbs *yanbaɣi* “must”, *yataħattam* “must”, *yastatˁiʕ* “can”, *yaqdir* “can”, and *yumkin* “can” prefer a CP as their complement over an NP. Table 5 presents the percentages of occurrences.

TABLE 5
ARABIC DEONTIC MODAL VERBS AND THEIR COMPLEMENTS’ PERCENTAGES

The modal verb	No. of Occurrences	CP Complement	NP Complement
yanbaɣi	30,368	16,177 (53%)	5,204 (17%)
yataħattam	1,374	378 (28%)	355 (26%)
yastatˁiʕ	95,314	42,779 (45%)	8,041 (8%)
yaqdir	75,913	21,482 (28%)	6,432 (8%)
Yumkin	191,755	98,631 (51%)	18,982 (10%)

Furthermore, deontic modality verbs may optionally show gender agreement when the theme argument is a feminine noun. In example (41), the theme argument “al-salat-u” is feminine; therefore, the modal verb may or may not agree with the theme argument in gender.

(41) Ya-jibu/ta-jibu ʕala Khalid-in al-salat-u
3S.M-must/3S.F-must on Khalid-GEN the-prayer-NOM

"Khalid must pray."

Another example is (42), in which the modal *yanbaɣi* "must" may voluntarily agree in gender with *ad-dirasa-t-a* "the study".

(42) Ya-nbaɣi/ta-nbaɣi ʕala Ahmad-a ad-dirasa-t-a bi-jid-in
3S.M-must/3S.F-must on Ahmad-GEN the-study-S.F-ACC with-seriousness-G
"Ahmad has to study hard."

Soltan (2006) states that verbs expressing deontic modality in Arabic select a PP for their experiencer argument, as in the above example, where *Ahmad* is the experiencer argument and *ad-dirasata* is the theme argument.

Modality in English can be expressed using verbs or adverbs. In Arabic, deontic modality can be conveyed through PPs, such as *mina al-dˤaruwrii* "necessary", which function adverbially, as shown in (43) and (44).

(43) min-a al-dˤaruwri-i ʔan ta-drus-a
From-ACC the-necessary -GEN that 3S.M-study-SBJ
"You should study."

(44) min-a al-dˤaruwri-i al-ʕamal-u bi-jid-in
from-ACC the-necessary-GEN the-work-NOM with-seriousness-GEN
"It is necessary to work hard."

In example (44), the PP *min-a al-dˤaruwri-i* expresses the necessity of *al-ʕamalu bi-jid-in* "working hard". The modal *min-a al-dˤaruwri-i* occurred 4,134 times in the corpus. It was followed by a CP 2,485 times (60% of the examples) and an NP 775 times (19% of the examples). Again, this modal tends to collocate with a CP more frequently than with an NP.

Additionally, deontic modality can be expressed through the use of the particles *sa-* and *sawfa,* both of which will mean "will". The only difference in their meanings is that *sa* is used for the near future, whereas *sawfa* is used for the distant future, as shown in (45) and (46).

(45) Maha sa-ta-ʔkul-u
Maha FUT-3S.F-eat.IMP-IND
"Maha will eat."

(46) Maha sawfa ta-ʔkul-u
Maha FUT 3S.F-eat.IMP-IND
"Maha will eat."

The modal *Sawfa* occurred 49,939 times in the corpus, followed by a VP. In the same way, *sa* attaches to a VP. The tree (47), representing example (46), is illustrated as follows:

(47)
TP
3
DP T'
Maha 2
T MP
[Fut] 2
M'
2
M Imerf P
sawfa 2
Imerf'
2
Imerf VP
ta-ʔkul-u 2
DP V
~~Maha~~ ~~ta-ʔkul-u~~

As Arabic deontic modality can be expressed by modal verbs, such as: yajib "must", *yumkin* "may" plus a prepositional phrase (PP), that is, (modal + PP), sometimes the modal verb can be deleted, and the preposition is enough to convey the semantic meaning of obligation or permission. Those prepositions are *ʕala* "on" and *al-lam* "to". The preposition *ʕala* "on" can be used with or without the modal verb *yajib* "must" to express obligation, as in (48) and (49).

(48) (Yajib-u) ʕalay-ka ʔan ta-drus-a
must-IND on-you that 3S.M-study-SBJ
"You must study."

(49) ʕalay-ka ʔan ta-drus-a
on-you that 3S.M-study-SBJ
"You must study."

The preposition *ʕala* "on" occurred in the corpus 22,895 times, followed by a CP. The preposition *al-lam* "to" can be used to express permission with or without the modal verb *yumkinu* "may", as in (50) and (51).

(50) (Yumkin-u) la-ka ʔan ta-ʔkul-a
may-IND to-you that 3S.M-eat-SBJ

"You may eat." (permission→ root/deontic)

(51) la-ka maa tu-rid-u
for you what 3S.M-want-IND
"You may do what you want." (permission→ root/deontic)

Al-lam "to" occurred in the corpus 2,549 times, followed by a CP; however, it did not occur in the corpus followed by an NP.

B. Epistemic Modality in Arabic

Epistemic modality in MSA can be expressed through the use of modal verbs as *yumkin* "may" and *yuħtamal* "might". The modal *yuħtamal* "might" occurred in the corpus 3,802 times. It occurred 2,981 times (78%), followed by a CP and 343 times (9%), followed by an NP, as shown in (52) and (53).

(52) Yuħtamal-u ʔan yu-ɣadir-a Zaid-un al-balad-a
might-IND that 3S.M-leave-SBJ Zaid-NOM the-country-GEN
"Zaid might leave the country." (possibility→ epistemic)

(53) Yuħtamal-u soqotˁ-u al-amtˁar-i
might-IND fall-NOM the-rain.PL-GEN
"It might rain."

The modal verb *yumkin* "may" occurred in the corpus 191,755 times, with 98,631 instances (51%) followed by a CP and 18,982 instances (10%) followed by an NP, as in (54) and (55).

(54) Yumkin-u ʔan ta-nam-a al-bint-u bakir-an
may-IND that 3S.M-sleep-SBJ the-girl-NOM early-ACC
"The girl may sleep early." (possibility→ epistemic)

(55) Yumkin-u Nawm-u al-bint-i
may-IND sleep-NOM the-girl-GEN
"The girl may sleep."

Moreover, epistemic modality can be expressed through the use of prepositional phrases that function adverbially, such as *mina al-muʔkkadi* "certainly", as shown in (56).

(56) min-a al-muʔkkad-i ʔana-hu hadith-un murwri-un
from-ACC the-certain-GEN that-it.3S.M.NOM accident-NOM traffic-NOM
"Certainly, it is an accident."

The modal *mina al-muʔkkadi* "certainly" occurred in the corpus 3,491 times, with 3,200 instances (92%) followed by a CP and 34 instances (1%) followed by an NP. Here, it is evident that this modal prefers a CP complement to an NP one.

Additionally, epistemic modality can be expressed through the use of the prepositional phrase *mina al-muħtamali* "likely", which occurred in the corpus seven times, all followed by a CP (ʔan + VP). Furthermore, epistemic modality can be expressed through the use of the particle *qad*, which can be used in two different structures with two different readings, as shown in (a) and (b), taken from Fehri (2012, p. 104).

a. (*qad*+PERF) = certainty as in (57)

(57) al-walad-u qad katab-a ar-risalat-a
The-boy-NOM already/did wrote.PERF-3S.M the-letter-ACC
"The boy did write the letter."

b. (*qad*+IMP) = possibility as in (58)

(58) al-walad-u qad ya-ktub-a ar-risalat-a
The-boy-NOM may 3S.M-write.IMP-SBJ the-letter-ACC
"The boy may write the letter."

The modal *qad* occurred 303 times in the corpus, of which (*qad* + perfective) occurred 215 times (71%) and (*qad* + imperfective) occurred 27 times (9%). This suggests that the particle (*qad*) is more commonly used to express certainty. Tree (59), which corresponds to sentence (57), illustrates the syntactic placement of *qad* within the clause. In the structure, *qad* is positioned in the MP layer, situated below the tense and above the VP.

(59)
TP
2
DP T'
Al-waladu 2
T MP
2
M'
2
M PerfP
qad 2
Perf '
2
Perf VP

katab-a 2
DP V'
~~Al waladu~~ 2
V DP
~~katab a~~ ar-risalat-a

Moreover, epistemic modality can be expressed through the use of the particle *rubbama* "perhaps", as in (60).

(60) rubbama kaan-a fi al-bayt-i
perhaps/maybe was.3S.M-SBJ in the-house-GEN
"He might have been at home."

The modal *rubbama* "perhaps" occurred in the corpus 63,722 times, followed by a VP 10,268 times (16%). Interestingly, it only occurred 391 times (0.6%), followed by a CP. This shows that the modal *rubbama* "perhaps" prefers a VP complement over a CP. Tree (61), corresponding to example (60), illustrates the syntactic structure of *rubbama* in this context:

(61) TP
2
T'
2
T MP
2
M'
2
M Perf P
rubbama 3
Perf'
3
Perf VP
Kaana 3
V'
2
V PP
~~kaana~~ 2
P DP
fi 2
D NP
al bayti

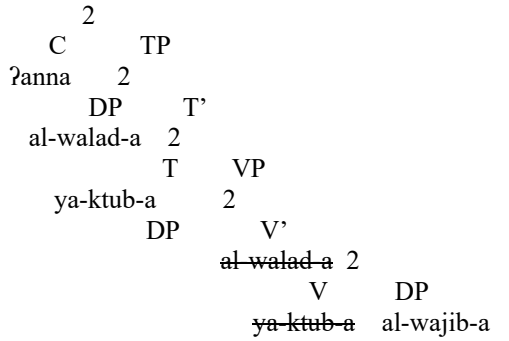
Finally, epistemic modality can be expressed through the use of the verb *yabdu* "seem". It occurred in the corpus 137,285 times, of which 48,030 times (35%), followed by a CP (ʔanna+ VP), as shown in (62) and (63).

(62) Yabdu ʔanna al-walad-a ya-ktub-a al-wajib-a
seem that the-boy-ACC 3S.M-write.IMP-SBJ the-homework-ACC
"It seems that the boy is writing/doing the homework."

(63) Yabdu ʔanna al-fatat-a ta-ktub-a al-wajib-a
seem that the-girl-ACC 3S.F-write.IMP-SBJ the-homework-ACC
"It seems that the girl is writing/doing the homework."

The tree structure for sentence (62) is shown in (64), illustrating the syntactic position of *yabdu* as a modal verb in the MP layer above the CP complement.

(64) TP
2
T'
2
T MP
2
M'
2
M V
Yabdu 2
V'
2
V CP
2
C'



The Arabic verb *yabdu* "seem" with the epistemic modality meaning does not inflect for tense, person, number, or gender. "The verb yabdu (=seem) is invariant in its morphology……it always surfaces with third person singular masculine default agreement, whether or not a DP is preceding it" (Soltan, 2006, p. 12). Consequently, example (65) is considered ungrammatical.

(65) *ta-bdu ʔanna al-fatat-a ta-ktub-a al-wajib
3S.F-Seem that the-girl-ACC 3S.F-write.IMP-SBJ the-homework-ACC
"It seems that the girl is writing/doing the homework."

Based on these examples, the modal verb *yabdu* "seem" selects a CP following it. According to Soltan (2006), "[Standard Arabic] does not have raising; rather, seem-type predicates always select a finite CP" (p. 12).

The preceding examples demonstrate that Arabic modals exhibit a preference for CP complements, highlighting a syntactic tendency that distinguishes Arabic modality from English.

VI. Conclusion

This study examined modality in MSA, addressing key questions related to the classification, syntactic positioning, and complement selection of Arabic modals. Addressing the research questions posed at the outset, the findings reveal the complex interplay of verbs, prepositional phrases, particles, and prepositions in the expression of modality in Arabic. A crucial distinction is that *yajibu* "must", *yanbaʏi* "must", *yataħattam* "must", and *yumkin* "may" inflect for tense but remain invariant in person, number, and gender. In contrast, *yastatˁiʕ* "can" and *yaqidr* "can" inflect for tense, person, number, and gender. Furthermore, *yastatˁiʕ* and *yaqidr* display different agreement patterns depending on word order, showing partial agreement in VSO structures and full agreement in SVO structures. A notable finding is that only deontic/root modals appear in the perfective form, distinguishing them from epistemic modals. Additionally, Arabic exhibits a fixed hierarchical ordering of modal elements, aligning with Cinque's (1999) hierarchy of modal heads, where obligation modals (e.g., *yajib* "must") appear higher in the syntactic structure than ability/permission modals (e.g., *yaqdir* "can"). This supports the broader cross-linguistic observation that epistemic modals occupy higher syntactic positions than root ones. Another key insight from the corpus data is that Arabic modals strongly favor CP complements over NP ones. This preference can be attributed to the explicit subject marking within CPs, which helps disambiguate the modal scope and interpretation. The structural configurations of Arabic modals include (modal + (PP) + CP), (modal + (PP) + NP), and (modal + VP), with the latter being unique to future markers such as *sa-* and *sawfa*.

Appendix. Glossary of Abbreviations

ACC Accusative case
CP Complementizer phrase
FUT Future tense
GEN Genitive case
IMP Imperfective
IND Indicative mood
MP Mood phrase
MSA Modern standard Arabic
NOM Nominative case
NP Noun phrase
PL Plural
PP Prepositional phrase
PRF Perfective
SBJ Subjunctive mood
SG Singular
SVO Subject-verb-object word order
TP Tense phrase
VP Verb phrase

VSO Verb-subject-object word order

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