

The Manifestation of Mood and Modality in Texts

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Abstract: *There is a dearth of studies on mood and modality as a focus. This study examines their manifestation in texts. The data comprises 3,069 verbal groups obtained by orthographically transcribing Christian Religious Knowledge, Geography, Physics, and Chemistry lessons recorded in schools in Lagos, Nigeria and identifying all the verbal groups therein. The topics taught were respectively The mission of the Church, The Drainage System, Electric Field, and Nitrogen. The scale-and-category version of the systemic grammatical model, complemented by simple percentage, aided the analysis. Results show that mood recurred far more than modality; mood represents 72 per cent of the data and 81 per cent of the finite verbal groups as against modality's 13 and 14. However, modality was higher than interrogative mood and imperative mood, which respectively represent 11 and 8.3 per cent of finite. Imperative mood recurred more in Physics, and was more frequently occurring in segments of the lesson involving strict computation. Root modality and Epistemic modality manifested at a ratio of 3:2 in favour of Root meaning, but Epistemic modality was significantly higher than Root modality in Physics. The study confirms WILL and CAN as the most recurring modals, and finds that they exceeded the reported 4.2 and 3.5 in 1,000 word-occurrence by 67 and 46 per cent respectively.*

Keywords: *imperative mood, interrogative mood, declarative mood, Epistemic modality, Ro modality*

1. INTRODUCTION

There is a dearth of studies focused on mood and modality together as systems of the English verbal group (VBG). Although there are works and symposia titled "Mood and Modality", their thrust is on modality, not mood, or mood and modality. For as Palmer (2001:xv) states, the inclusion of mood in Mood and Modality is for its informative value, since the subject of modality "was fairly unfamiliar". Modality is the more studied of the two, probably because it is problematic and difficult (Quirk et al., 1985:220; Huddleston, 1984:165). Despite the enormous literature on the subject, however, there does not seem to exist any corpus-based study characterising modality in texts. For example, Coates (1983) and Palmer's (1990) book-length studies on the modals are not textual. Though Coates provides statistical information and characterises the modals in terms of spoken/written and formal/informal usage, the size and heterogeneity of the corpora mean generalisations on modal behaviour in particular text types does not emerge. But that is not the goal of her study, which establishes the differences in modal usage between spoken and written language. Palmer (1990:29) does not characterise modal uses or provide statistical information, since the Survey material serves "heuristic and exemplificatory purposes only". So there is only a general information on the relative frequency of modal meanings in the language.

Mood has attracted little attention as a system in its own right, and there does not appear to be a corpus-based study either. Outside the subjunctive accorded a short section under "Verbs and Auxiliaries", there is nothing explicitly on the subject in the reference book *A Comprehensive Grammar of the English Language*. For instance, Chapter 11, titled "Sentence Types and Discourse Functions", treats questions and directives.

The foregoing forms the background against which this study examines the manifestation of mood and modality in texts. Specifically, the study identifies the pattern of occurrence of mood and modality as separate systems of the VBG in terms of form and meaning, compares the

frequency of both systems in the corpus, and accounts for possible differences between their pattern of occurrence and reported norms.

2. DESCRIPTION OF MOOD AND MODALITY

One justification for examining mood and modality together is their relatedness. Quirk et al. (1985:150) point out that VBGs marked for modality are also indicative and that they syntactically resemble imperative and subjunctive moods by lacking person, number and tense contrasts. Although VBGs marked for imperative mood do not mark modality, there is a semantic connection between imperatives expressing “command” and modals expressing obligation: Both impose an obligation on the addressee because, as Halliday and Matthiessen (2004:627) put it, modulation “was characterized as the ‘imperative type’ of modality”. Palmer (1990:71) and Quirk et al. (1985:234) respectively show rare instances where *can* conveys a (brusque) command and *would* and *should* mark subjunctive mood. Apart from belonging to the VBG and sometimes converging on the same form, mood and modality both deal with the interpersonal function of language (Halliday, 1976:198,213). But there are differences between them, which Huddleston (1984:166) likens to differences between tense and time. Mood is a category of grammar that deals with the differences in the morphology of the verb, whereas modality is a category of meaning that deals with “the status of the proposition” (Lyons, 1977:746; Palmer, 2001:1).

Possibly because of the connection between mood and modality both terms are sometimes used interchangeably and in a somewhat confusing manner, with mood often used as a cover term for both, or vice versa (Huddleston, 1984:164; Greenbaum, 1996:80). For example, Lyons (1968:308) uses the adjective modal and the noun modality in respect of mood thus: “interrogative sentences are quite clearly modal and are characterised by additional modalities which indicate the expectations of the speaker”. Strang (1969:160,165) talks of a binary modal system comprising non-modal (mood) and modal (modality), akin to Huddleston’s “analytic mood”, and adds that modals function to indicate mood. Palmer (2001:4) states that modality is concerned with the modal system and mood, and that explains why it is difficult to distinguish between mood and modality. Halliday and Matthiessen (2004:113) remark that the term modal is ambiguous because it corresponds to both mood and modality. Given this confusion, a separate review of existing descriptions of each system is necessary.

2.1 Mood

The Oxford English Dictionary (p.1844) defines mood as “any of the several groups of forms in the conjugation of a verb which serve to indicate...whether it expresses a predication, a command, or a wish, or the like”. Mood is therefore a category of grammar that deals with the differences in the morphology of the verb; it is the grammaticalisation of the differences between “mands” and statements (Lyons, 1977:746; Palmer, 2001:1). Mood is concerned with the speaker’s attitude towards the proposition, and this is reflected in the form of the verb (Greenbaum and Nelson, 2002:62). It is therefore situated in the verbal group, not in the clause, or both the clause and the verbal group, as Berry (1975:166) and Strang (1969:84) respectively suggest. There are two terms in the system of mood (imperative and indicative), although some grammarians recognise a third, the subjunctive mood (Greenbaum, 1996:80). Imperative mood and indicative mood are differentiated semantically on the basis of the contrast between factuality and non-factuality (Huddleston, 1984:164-66; Quirk et al., 1985:149). According to Lyons (1977:746), imperative mood refers to the mood of the verb; it is the “principal mood of will and desire” and it is “ontogenetically more basic than the indicative, the mood of statement”. This makes imperative mood the marked term in the system of mood. Verbal groups marked for imperative mood are finite, base form verbs; they do not mark modality, occur with an auxiliary (except in negation), or make tense, person and number contrasts. Imperatives are typically used in commands, requests and directives, and do not occur in subordinate clauses or questions because they are performative (Lyons, 1968:307, 1977:746; Huddleston, 1984:78; Palmer, 1987:34-35, 95, 171; 2001:80, 137-38; Halliday and Matthiessen, 2004:134).

The interrogative and declarative, into which the unmarked indicative mood subdivides, lack the inflectional forms that relate imperative to “mands”. Although both make tense, person and number contrasts, they differ syntactically, phonologically and semantically. For instance, the declarative is the mood of statement and so gives information, whereas the interrogative is the

mood of questions and thus seeks information. The interrogative subdivides into polar and non-polar subtypes (Lyons, 1968:307-08, 1977:746-48; Quirk et al.,1985:149).

The account of mood made in this study is based on the two-term system of imperative and indicative; it is not concerned with subjunctive mood because it is “archaic” and “has virtually disappeared” from modern English (Huddleston, 1984:80,164;Leech,1987:112; Palmer, 2001:4).

2.2 Modality

Quirk et al.(1985:219) define modality as the “manner in which the meaning of a clause is qualified so as to reflect the speaker’s judgment of the likelihood of the proposition it expresses being true”. Modality is a category of meaning that deals with “the status of the proposition”(Lyons, 1977:746; Palmer,2001:1). As a semantic feature of the verbal group modality is marked by modal auxiliary verbs, although it may also be marked by non-verbs, such as possibility and perhaps (Halliday, 1976:192-93; Greenbaum,1996:81; Palmer,2001:1). Modal meanings are variegated, and this probably explains their diverse classificatory criteria.

Palmer(1974:100-04;1987:96-97;1990:5-7,35-38) classifies modality into epistemic, deontic (discourse-oriented) and dynamic (subject-oriented) subtypes. Epistemic modality is concerned with the speaker’s attitude to the factuality of the proposition (e.g., “He can’t have been there yesterday”); deontic modality relates to “some kind of activity, quality, status etc. of the subject” (e.g., “John will come tomorrow”); and, dynamic modality relates to the role of “one of the participants in the discourse” (e.g., “John shall come tomorrow”). Epistemic and deontic modals are the “true” modals because they have illocutionary force. Palmer (2001:7-8,24-39) further describes epistemic modality as propositional modality because it makes “a judgement about the probability of the truth of the proposition”, and deontic and dynamic modality as event modality because they refer to un-actualised, potential events, such as obligation or permission, and ability or willingness, respectively.

Coates (1983) categorises modality into Epistemic and Root (see Greenbaum and Nelson, 2002:111). This is akin to Quirk et al.’s (1985:219-20) extrinsic-intrinsic, Greenbaum’s (1996:260) epistemic-deontic, and Halliday and Matthiessen’s (2004:618-19) modalisation-modulation, categorisations of modality. Traced to Hoffmann (1976:85) in Palmer (1990:37), Coates (1983: 20) prefers Root to the modal logic term deontic because it is not limited to obligation and permission. Root modality encompasses deontic and dynamic modality. Although Palmer (1990:8,37) agrees that the binary distinction between Epistemic and Root modality is “both formally and semantically the clearest”, he insists on the validity of the deontic-dynamic dichotomy which, Coates (1983:21) admits, has some merits in certain contexts. Leech’s (1987:81) distinction between “factual possibility” and “theoretical possibility” with respect to may and can is a tacit recognition of the Epistemic-Root distinction.

According to Coates (1983:18-20), Epistemic modality is subjective; it involves human judgement and expresses the speaker’s reservation about the truth of the proposition. Epistemic modals lack the past tense form and are generally unaffected by negation and aspect (see Lyons, 1977:792-800; Quirk et al.,1985:794-98;Palmer,1990:10). Root modality on the other hand involves human control. Although Root modals are more difficult to characterise, they can be identified using such features as occurrence with animate subject, agentive verb, passivization, and stress and intonation (Coates,1983:20,21).With the notable exception of can, which expresses Epistemic meaning only as the negative form of must, all modals make the Epistemic-Root distinction (Coates,1983:19,85; Quirk et al.,1985:219,225; Palmer,2001:103). This Janus-like feature of the modals is one reason why modal meanings are difficult to describe.

Coates’(1983) study aimed at establishing the differences in modal usage between written and spoken language presents one of the most comprehensive, large-scale, corpus-based studies of the English modals. It is based on the Lancaster (1,000,000 words) and Survey of English Usage (725,000 words) corpora. Coates first classifies the modals into Epistemic (e.g., must, should, ought, may, might, will, could, and BE GOING TO) and Root (e.g., must, may, should, ought, can, could, will, would, shall, and BE GOING TO), before sub-classifying them into more specific meanings, or what Palmer (1990:36) calls “degrees of modality”. Thus there are modals of obligation and necessity (must, need, should, and ought), ability and possibility (can and

could), Epistemic possibility (may and might), volition (willingness and intention, e.g., will and shall) and prediction (will and shall), and hypothetical modals (would and should). Among other findings, Coates reports that whereas Epistemic modality is higher in informal speech, Root meaning is higher in formal written language and formal spoken language. Modals occur more frequently in spoken language than in written language. Prediction is the most recurring modal meaning while permission is the least. WILL and CAN are the most recurring modals in spoken language, with a respective frequency of 4.2 and 3.5 in 1,000 words. Coates' framework is adopted for this study.

3. METHODOLOGY

The data for this study is spoken language data; it is data on spoken instructional texts produced in a non-EMT use situation. Christian Religious Knowledge (CRK), Geography, Physics, and Chemistry lessons were tape recorded in selected secondary schools in Lagos State, Nigeria. The lessons lasted 196 minutes in all. The CRK and Geography lessons lasted 40 minutes each, while the Physics and Chemistry lessons were of 56 minutes and 60 minutes duration respectively. The Mission of the Church, The Drainage System, Electric Field, and Nitrogen were the respective topics taught. Each text was orthographically transcribed, and the clauses and VBGs were identified and numbered. The CRK, Geography, Physics and Chemistry texts yielded 780,668,757 and 864 VBGs respectively. Thus 3,069 VBGs constitute the data. The corpus size was 17,600 words. The finite VBGs and VBGs functioning at the primary degree of delicacy as predicators were identified first. Each VBG was carefully examined in its clause context to determine its mood status. The frequency of each term was determined, among others. Verbal groups marked for modality were identified next, and each was closely examined to determine the modals involved, their frequency, and their meanings. Both systems were compared and contrasted. The scale-and-category version of the systemic grammatical model, complemented by simple percentages, served as analytic tool.

4. ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

There were 2,739 finite VBGs and 2,221 VBGs functioning at the primary degree of delicacy. These respectively represent 89 per cent and 72 per cent of the data. The CRK, Geography, Physics and Chemistry texts manifested 732, 615, 597 and 795 finite VBGs and 545, 496, 519 and 661 VBGs functioning at the primary degree of delicacy respectively. All the 2,221 VBGs in primary syntactic function as predicator made selection from the mood system. Thus mood represents 72 per cent of the data, 81 per cent of the finite VBGs and 100 per cent of VBGs functioning at the primary degree of delicacy in the clause structure. In contrast, there were 383 VBGs marked for modality, which represents 13 per cent of the data, 14 per cent of finite, and 17 per cent of VBGs in predicator function. Each system is accorded a separate attention in the presentation that follows. Numbered excerpts, each beginning with the letter code for the source text (e.g., R for CRK), followed by the letter K for clause and the clause' number, are provided. The VBG under focus is italicised and its number is enclosed in brackets. Where audible, pupils' responses are enclosed in brackets after the symbol (R:).

4.1 The Manifestation of Mood

Of the 2,221 VBGs implicated for mood, 221 (10 per cent) selected imperative mood while 2,000 (90 per cent) were indicative. The 2000 indicative mood verbal groups comprise 310 (16 per cent) interrogative mood and 1,690 (85 per cent) declarative mood. Imperative mood, interrogative mood and indicative mood are examined in turns as follows.

4.1.1 Imperative Mood

There were 221 VBGs marked for imperative mood. This represents 7.4 of the data, 8.3 of finite, and 10 per cent of VBGs functioning at the primary degree of delicacy. Thirty-five VBGs were marked for imperative mood in CRK, 46 in Geography, 82 in Physics, and 58 in Chemistry. In Physics where they recurred the most, verbal groups marked for imperative mood represent 11 per cent of the data, 15 per cent of finite, and 16 per cent of VBGs in predicator function. Its proportion in respect of all three parameters was 7.8 and 9 per cent in Geography, 7, 7.2 and 9 per cent in Chemistry, and 5, 5 and 6 per cent in CRK. Relative to the duration of the lessons, an imperative mood verbal group occurred every 53:2 seconds on the average. However, its

frequency was 1 in 41 seconds in Physics, 1 in 52:2 seconds in Geography, 1 in 62:1 seconds in Chemistry, and 1 in 69 seconds in CRK.

Structurally, the VBGs manifested as H-Type (135 or 61 per cent, e.g., read R350, ignore P651, give C50, compare G620), MH-Type (2 or 1 per cent, e.g., RK450 Don't be (566) selfish), HQ-Type (83 or 38 per cent), and MHQ-Type (1 or 0.5 per cent: CK119 Don't let her...(138)). The HQ-Type VBG featured both the catenated(73,e.g.,keep standing R157,158, let assume G392, let talk about P411, and let continue C193) and particled (11,e.g., go on R134, look at G609, think back P694) subtypes. Verbal groups marked for imperative mood indicate order as an underlying semiotic function and were associated with textual functions such as assigning tasks, admonishing pupils, and expressing intention. Excerpts [1]-[3] illustrate.

[1] RKII What is the mission of the Church?...K18Just summarise (21) it.

[2] GK534Yes drop (579) the chalk there...K536 Move (581). K537 Go (582) and K538 listen(583).

[3] CK595 Let me ask (652) you a question.

Because of its high frequency and peculiar pattern of occurrence in Physics, the rest of this examination of imperative mood marking in the data centres on that text. It was stated above that 82 VBGs marked for imperative mood, representing 11 per cent of the data and 15 per cent of finite, occurred in the 56-minute lesson at a frequency of 1 in 41 seconds. The rate however differed according to the activities in each segment of the lesson as would be seen later. The topic taught (Electric Field) required solving mathematically-related problems for its explication, and four such problems were worked. With the exception of Worked Problem IV, all began with an imperative VBG; moreover, the intention to solve a problem was expressed using an imperative thus:

[4] PK33 So let's take (44) an example under Coulomb's law...K158 So let's take (185) our second example...K428 Let 's take (452) a question on electric field intensity...K524 So let 's take (581) question number two on electric field intensity.

The four worked problems lasted approximately 47 minutes, during which 668 VBGs, including 75 marked for imperative mood, were produced. The order rate was 1 every 38 seconds, but it again differed according to the worked problem. For instance, Worked Problem II, the second on Coulomb's law used to explain the concept of electric field, lasted 16 minutes (the longest:K158-K382) and produced 228 VBGs (the highest). Twenty-six VBGs marked for imperative mood occurred at a frequency of 1 in 37 seconds in this segment. Worked Problem IV(K524-K678) took 12 minutes to conclude and it accounted for 167 VBGs,14 of which indicated order at the rate of 1 every 51:43 seconds. Worked Problem I(K33-K157) recorded the highest rate of imperative mood manifestation; it lasted 10 minutes and produced 20 imperatives out of 143 VBGs at a frequency of 1 every 30 seconds. The shortest was Worked Problem III (K428-K523);it lasted 9 minutes and produced 130 VBGs, including 15 imperatives that occurred at the rate of 1 in 36 seconds. In the first, second, third and fourth worked problems an imperative mood VBG occurred every 30,37, 36 and 51:43 seconds respectively. This gives a percentage deviation from the group mean of 38 seconds of 21.05, 2.63, 5.26, and -35.34 respectively. An abridged version of Worked Problem 1 is reproduced as follows.

[5] PK33 So let's take (44) an example under Coulomb's law. K34. Question number one. K35 Find(45)the force of repulsion between two protons...K40 Let me repeat (52) the question...K47 Now, the first thing you have to do is to write down the given values...K63 From the question we are being asked to find the force of repulsion, K64 which is the electric field...K66 Look at (86) the question again. K67 Q_1 and q_2 is (sic) known. K68 The value of distance is known. K70 So plug in (90) the value... K72 This should give us one point six times ten raised to power nineteen bracket squared...K79 That's where you got confused...K87 Now, from here let's see (109) the value here...K89 Now, look at (111) this. K90 Is this not k?...K112 So, from here use (126) your calculator to...K114 What's the value? K115a Press (129) the magic button...K138 Using indices, K139 this will be plus twenty-two. K140 So add (108) and K141 subtract (169). K142 What do you have? (R:Minus zero) K143 Minus zero. K144 So whatever answer you get should be minus zero...K157 Any question?

Nine minutes and 89 VBGs (including 7 marked for imperative mood) remain to be accounted for. These lie in the pieced segments of the lesson outside the four worked problems. The order rate here was 1 in 77 seconds (twice as infrequent as in the worked problems). Indeed 5 of the 7 VBGs occurred in the process of deriving formulae for Coulomb's law and electric field intensity. Excerpt [6] illustrates. (Notice that let talk about (411) occurs in a strictly non-computational context.)

[6] PK13 If we combine these two formulae, K14 call (18) this equation one and this equation two... K384 So let's talk about (411) electrical intensity... K393 So that's the force per unit charge. K394 Okay. K395 And the equation is given as e is equal to f over q ... K397 Call (421) this equation one. K398 From our earlier definition we do know that f is equal to $q_1 q_2$ raised to power k over r squared. K399 Call (426) this equation two.

In summary, VBGs marked for imperative mood were more frequently occurring in Physics, and the rate was higher in segments of the lesson involving strict computation. Since this could not have been coincidental, it must be the case that VBGs marked for imperative mood facilitate the attainment of pedagogic goals in mathematically-oriented subjects in more profound ways.

less dense than air... K264 The balloon will do (287) what? K267 It will rise up.

4.1.2 Interrogative Mood

Interrogative mood represents 10, 11 and 14 per cent respectively of the data, finite VBGs and VBGs functioning at the primary degree of delicacy with 310 occurrences. Over one-third occurred in CRK, where it accounted for 14, 15 and 21 per cent of all three parameters. In general, an interrogative mood VBG featured every 38 seconds; it manifested every 21:43, 35, 56, and 66 seconds in CRK, Chemistry, Geography, and Physics respectively. BE-headed (106 or 34 per cent) and DO-modified (93 or 30 per cent) forms were prominent. The non-polar interrogative was dominant (225 or 73 per cent), and what (158 or 72 per cent) was the wh-item.

Although the dominance of the non-polar interrogative suggests that advanced cognitive skills in listening comprehension were more greatly tested than the mere ability to recall, questions conveyed by the polar interrogative were no less tasking. An attestation is the DO-think VBG in introspective questioning (see [7] below). A co-occurrence of the polar and non-polar interrogative was observed and, as can be seen in [7] below, this served to disambiguate questions. Furthermore, there was the repetitive use of the polar interrogative subtype and the non-polar subtype as technique for introducing new terms and concepts (see [8]) and transiting from one segment of the lesson to another ([see [9]) respectively.

[7] RK238 But when Simon saw this, K239 he thought it was something very simple... K245 He wanted to give them money so that he could receive this gift also. K246 Do you think (318) he had the right motive...? (R:No)... K248 What would have been (323) his motive? (R: Inaudible).

[8] GK12 How do you discover (13) that this is (sic) particular drainage system that we are discussing? K13 Is (16) it trellised? K14 Is (17) it centripetal? K15 Is (18) it radial? K16 Is (19) it dendritic? K17 Is (20) it centrifugal? K18 Is (21) it bar bed ?

[9] RK421 But when Philip left Samaria, K422 what was (533) his next destination? K423 Where did he go (534)... K425 And who directed (537) him? K426 That's what we want to find out now.

4.1.3 Declarative Mood

With 1,690 VBGs declarative mood represents 55 of the data, 62 finite VBGs, and 76 per cent of the VBGs in primary syntactic function as predicators. The indicative declarative mood VBG shares some functional similarity with the data base for this study: Declarative mood VBG primarily information-giving and spoken instructional texts are primarily knowledge-imparting texts. Both features appear to merge in the excerpts below.

[10] CK189 Nitrogen occurs (215) abundantly in the atmosphere... K192 Yes we have (215) about 78 per cent of nitrogen in the atmosphere. K193 It is (216) relatively inert... K196 It doesn't react (220) easily... K199 It is (223) colourless, odourless and K200 it is (224) neutral to litmus... K203 It is (227) almost insoluble in water.

[11] RK141 As he preached (184) the word, K142 the power also was demonstrated (185). K143 There were (186) signs. K144 There were (187) miracles. K145 So the people had (188) no option. K146 They saw (189) the power of God. K147 So they accepted (190) his message.

Another feature of the declarative mood VBG identified is its occurrence in declarative clauses phonologically realised as interrogatives. These are echo questions and 45 VBGs representing 3 per cent of the total manifestation of the unmarked declarative were involved. Apart from marking the data as natural spoken language data, echo questions served as technique for revising taught processes. Here are the excerpts. [

[12] CK257 Somebody said hydrogen is used to fill balloons...K262 simply because hydrogen is (283) what? K263 is

It is not known how frequently imperative mood, interrogative mood, or declarative mood manifests in natural language; it is also not known what proportion of a corpus of VBGs each term constitutes. So the figures found here are tentative and require further confirmation. However, a pattern of occurrence seems to have emerged: Declarative mood is dominant, and this is in order because the spoken instructional texts analysed are knowledge-giving texts and the declarative mood VBGs that occurred in them are information-giving structures. Furthermore, its dominance suggests that in everyday life activity, far more information is given than sought, and fewer orders are issued than the information given or sought.

4.1.4 Modality Marking

Modality represents 13, 14 and 17 per cent respectively of the data, finite VBGs and VBGs functioning at the primary degree of delicacy. It represents 19, 15, 12 and 9 per cent of the finite VBGs in Chemistry, Physics, CRK and Geography with 151, 89, 87 and 56 VBGs respectively. What follows covers modals and their frequency, Epistemic and Root modality, and specific modal meanings.

4.1.5 Modals and their Frequency

Sixteen modal auxiliary verbs marked modality in the texts. These are listed in descending order of magnitude and with their frequency enclosed in brackets as follows: will (121), can (90), BE GOING TO (49), HAVE TO (35), should (21), would (17), BE ABLE TO (15), could (10), must (9), BE TO (9), BE ABOUT TO (3), BE SUPPOSED TO (2), may (2), might (2), shall (1), and BE MEANT TO (1). The enclosed figures translate to a respective frequency of 7, 5.11, 3, 2, 1.19, 1, 0.9, 0.6, 0.51, 0.51, 0.17, 0.11, 0.11, 0.11, 0.1, and 0.1 in 1,000 words. The figures also show that will, can, BE GOING TO, should, HAVE TO and BE ABLE TO were significantly more frequent, and would, could, must, may, might and shall less frequent, than reported.

The high frequency of will and can supports the finding that both modals and their past forms are more frequent in spoken language. However, both exceeded the reported 4 in 1,000 words and 3.5 in 1,000 words by 67 per cent and 46 per cent respectively. Only in CRK was will relatively infrequent (2.13 in 1,000 words). In Chemistry, will and can had a respective frequency of 11 in 1,000 words and 10 in 1,000 words, which translates to a percentage deviation of 162 and 186 respectively from the reported norm. With a frequency of 1 in 10,000 words shall was rarer than its reported 3 in 10,000 word-occurrence in normal written English. The non-occurrence of ought, need and dare could be evidence that they are truly “strikingly less frequent than shall” (Coates, 1983:23,24; Quirk et al., 1985:136; Leech, 1987:73).

4.1.6 The Epistemic-Root Distinction

Epistemic modality and Root modality manifested at a ratio of 3:2 in favour of Root meaning: The one accounted for 39 per cent (150 VBGs), and the other 61 per cent (233 VBGs), of modality marking. This supports Coates’ (1983:247) finding that there is a higher proportion of Root meaning in formal written and formal spoken language than Epistemic meaning. (The texts are spoken instructional texts and are therefore a form of formal spoken language.) Root meaning was dominant in CRK (78 per cent) and rightly higher in Chemistry (63 per cent) and Geography (66 per cent). Physics was the only text in which Epistemic modality (63 per cent) was higher than Root modality.

Fourteen specific modal meanings were identified. These are listed with their frequency and percentage enclosed in brackets as follows: possibility(104 or 27), prediction (73 or 19), predictability (70 or 18), necessity (43 or 11), intention (38 or 10), obligation (25 or 6.3), ability (8 or 2.1), hypothetical (5 or 1.3), willingness (4 or 1), planning (4 or 1), permission (3 or 0.8), destiny (3 or 0.8), compulsion (2 or 0.5), and habitual (1 or 0,3). While possibility, prediction, predictability, necessity, obligation, and hypothetical were both Epistemic and Root, intention, ability, willingness, planning, permission, destiny, compulsion and habitual were expressed in the Root sense only.

Broad PREDICTION (comprising prediction and predictability) was the single most recurring specific modal meaning (143 or 37per cent); it was largely Epistemic (80 per cent) and will (84 per cent) was the modal. The dominance of Epistemic will supports Leech's (1987:84) claim that will meaning PREDICTION is more common in scientific or quasi-scientific statements. This explains its high occurrence in Physics, where relationships and results of mathematical operations had to be constantly predicted. But it is rather ironical because Epistemic modality is subjective whereas objectivity is a cardinal principle of science. Four instances of dual modality were found (see [12] below).

4.1.7 Modal Meanings Illustrated

Possibility was expressed in both the Root (95) and Epistemic (9) senses by can, may, BE ABLE TO, could and might . However, while can (81) was characteristically Root, and may expectedly Epistemic, the other modals indicated possibility in both senses. Here are examples.

[13] RK93 We are going to read a little before we go to the actual story...K97 Act 8. K98 Let's read...K101 We may not be able to finish (131) everything. (E--possibility, possibility)

[14] PK128 You can use (145) indices to solve this, K129 then use your calculator to divide.(R)

[15] CK415 What did we do to the air before we could liquefy (457) it? (R)

PREDICTION was expressed by will (113), BE GOING TO (23), and would (7) as Epistemic prediction (51, eg., [16]), Root prediction (22, e.g., [17]), Epistemic predictability (63, e.g., [18]), and Root predictability (7, e.g., [19]). The excerpts are reproduced accordingly.

[16] CK17 What is the atomic number of nitrogen? (R: Seven) K18 And then the atomic mass is what? K19 Fourteen... K21 What will be (23) the electronic configuration?

[17] PK543 Now I want you to take a look at the diagram and K544 tell me whether we are going to have (606) a force of attraction on P or a force of repulsion.

[18] PK8 If you have two charges, K9 an electric field will exist (13) between the two charges.

[19] RK544 You know the characteristics of a sheep... K546 It's meek, isn't it?...K548 Whatever you tell the sheep is what it would do (679)...K554 They will just go (686) calmly.

Whereas necessity was almost evenly distributed between Epistemic(22) and Root(21) meanings, obligation was slanted towards the Root sense (19). Both meanings were expressed in both senses by HAVE TO, must, and BE SUPPOSED TO. While HAVE TO dominated Root necessity (17) and obligation (6), and should (13) Epistemic necessity, the single occurrence of BE MEANT TO expressed Root obligation.

[20] GK7 The river is flowing on laterite soil, K8 the lower land system then must be (8) on laterite.(E--logical necessity)

[21] PK112 So from here use your calculator to K113 You should get (127).(R--necessity)

[22] PK15 If you combine the two equations, K16 you are going to have e is equal to q_1q_2 all over r squared and K17 you have to add (23) k, K18 where k is the constant of proportionality. (E--obligation)

[23] RK 82 And look at the qualities of the men to be chosen.K83 Yes, they must be filled (111) of the Holy Spirit...K86b They must be (113) men of good repute. (R--obligation)

Would expressed hypothetical meaning in both the Epistemic and Root senses, e.g.,

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[24] RK374 What if he had not obeyed the angel of the lord, K474 would anything have happened (591)? (R)

Root intention was expressed by BE GOING TO (26), will (6), would (2), shall, and BE ABOUT TO. Contrary to Quirk et al.'s (1985:218) report, BE ABOUT TO indicated fulfilled future intention in the past (see [26]).

[25] CK330 We liquefy the air through a series of compression and expansion. K331 I'm going to explain (361) that...K812 Alright, sit down everybody. K813 I will take (864) your attendance.

[26] RK80 So they decided they would choose (107) seven men...K556 And that was what Jesus was about to do (689). K557 He was about to die (690) for the world (Jesus did die).

Ability, willingness, permission, destiny, compulsion, and habitual were all Root meanings. Root ability was expressed by can, could and BE ABLE TO while willingness was indicated by will and would. Permission was expressed by can, habitual meaning by would, and planning, destiny and compulsion by BE TO.

[27] RK351 The lame could walk (453)...K369 Who do you think exposed the motive of Simon? ...K371 It was the Holy Spirit. K372 The Holy Spirit can look into (474) the heart of a man (Ability)

[28] GK418 When I gave this question to that class...K420 only two students were able to satisfy (469) me...(Ability)

[29] RK313 She started going all over the place, K314 looking for somebody that would deliver (409) her. (cf. CK270 Why would you use (293) hydrogen to cut metals?) (Willingness)

[30] RK206 They were to go (257) and complement the work that Philip was doing among the Samaritans. (Planning)

[31] CKIII Please look for ammonia there for that girl and K112 give it to her. K113 You can open (132) it. (cf. RK508 You can sit down (628) my dear)) (Permission)

[32] RK27To go into all the world, K28 which means that the gospel was now to go (35) beyond the regions of the Jews. (Destiny)

[33] RK486 You listened when she was reading. K487 You are to tell (603) me what you've just enjoyed. (Compulsion)

[34] RK548 Whatever you tell the sheep is what it would do (679).(Habitual: Predictable habit)

That Epistemic possibility and Root necessity were comparatively low occurring is explainable: Both are respectively the primitive meanings of Epistemic modality and Root modality (Lyons, 1977:802; Huddleston, 1984: 166-67; Palmer, 1990:9, 2001:91) and core meanings occur less frequently than peripheral ones (Coates, 1983:13). The supremacy of Epistemic meaning (particularly Epistemic will) over Root in Physics was because of the constant need to predict relationships and results. The high occurrence of BE GOING TO in Chemistry was somewhat idiosyncratic.

5. CONCLUSION

This study aimed to identify the pattern of occurrence of mood and modality, compare the frequency of both systems in relation to the corpus, and account for differences in their patterning against available norms. The findings are summarised in this final section as concluding remarks.

Mood represents 72 per cent of the data, 81 per cent of finite, and 100 per cent of VBGs functioning at the primary degree of delicacy in the clause structure. Declarative mood was dominant; it accounted for 55, 62 and 76 per cent of the data, finite VBGs and VBGs functioning at the primary degree of delicacy as predicators. Interrogative mood and imperative mood accounted respectively for 10, 11 and 14, and 7.4, 8.3 and 10, per cent of all three parameters. The non-polar interrogative was dominant. A VBG marked for imperative mood occurred every 53:2 seconds, but its frequency was higher in Physics (41 seconds) and was highest (38 seconds) in segments of the lesson involving strict computation (It was 30 seconds in one segment).

Modality accounted for 13, 14 and 17 per cent of the data, finite VBGs and VBGs functioning at the primary degree of delicacy as predicators respectively. The Epistemic-Root distinction was made at a ratio of 3:2 in favour of Root meaning; only in Physics was Epistemic meaning significantly higher (63 per cent) than Root. PREDICTION was the most recurring specific modal meaning (37 per cent); it was Epistemic (80 per cent) and will (84 per cent) was the modal. Possibility followed with 27 per cent. Will, can, BE GOING TO, should, HAVE TO and BE ABLE TO were significantly more frequent, and would, could, must, may, might and shall less frequent, than reported.

Mood occurred far more often than modality; it accounted for 72 per cent of the data and 81 per cent of finite as opposed to modality's 13 and 14 per cent respectively. Significantly, all the VBGs in predicator function selected from the mood system whereas only 17 per cent made selection from the system of modality. Modality was however slightly higher than imperative mood and interrogative mood. Three factors explain the dominance of mood over modality in the data. First, modality is either marked or unmarked in a given VBG whereas every VBG in predicator function selects from the mood system. Second, with the exception of VBGs marked for imperative mood which do not also mark modality, all VBGs marked for modality are either declarative or interrogative in grammatical orientation. Third, modal auxiliary verbs, markers of modality, are a closed system whereas lexical verbs implicated in mood belong to an open set. These factors both reinforce and undermine the acclaimed similarities and differences between mood and modality.

It is not known what proportion of a corpus of VBGs manifests mood (or any of its terms), or mood and modality, due to the dearth of studies on the subject mentioned earlier. So the figures reported in this study are and need further confirmation. However, there are established reports on the subject of modality which the current study supports or refutes. Thus this study confirms Coates' (1983) finding that there is a higher proportion of Root meaning than Epistemic meaning in formal spoken language; it also confirms the rarity of shall and the high occurrence of PREDICTION as meaning and the modals will and can, among others.

Contrary to existing reports, however, the study found an instance where Epistemic modality was significantly higher than Root modality. It also found that with a frequency of 7 in 1,000 words and 5.11 in 1,000 words, will and can far exceeded the reported 4.2 and 3.5 occurrences in 1,000 words by 67 and 46 per cent respectively and that shall was rarer still with a frequency of 1 in 10,000 words. As Physics shows, there are strong indications that a text's subject matter dictates the pattern of modality marking. The need to predict relationships and results of mathematical operations made the choice of Epistemic modality imperative. This is where textual analysis as undertaken in this study comes in. Examining mood and modality together has revealed fresh facts about the similarities and differences between both systems. This should be consolidated.

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