EXPRESSIONS OF EPISTEMIC POSSIBILITY IN ACADEMIC WRITING IN ENGLISH AS A FOREIGN LANGUAGE

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Abstract

Epistemic possibility operates with *may* and interchangeably with *might* that introduce a direct-unobservable effect in a modalized causal relation that reveals a semantic cause-and-effect compatibility. It also operates with *could* to introduce a direct-unobservable cause without any authoritative evidential, *may* to introduce a cause derived from an authoritative (indirect-unobservable) assumption through an informal fallacy. The presence of the possibility level is reinforced by other operators. The operator *possible* is used to introduce a direct-unobservable cause without any help of an authoritative evidential, a direct-unobservable cause derived from an authoritative assumption through an informal fallacy, a causal relation between direct-observable evidentials as commentary on an authoritative theory after factive causality. The operator *seem* also introduces direct-unobservable cause, but also falsifies a prima facie perception. In addition to the epistemic uses, the same operators also indicate factivity, i.e., factive *may*, factive *might*, factive *possibility*, neutral-factive *could*. Finally, there are cases of a simultaneous use of possibility operators. Throughout the analysis of the data, epistemic possibility is characterized with non-factivity and optionality, i.e., proposing a non-factive option or an array of options. It may also be identified as presenting criticism of an assumption, criticism of the data, criticism of the ongoing learning situation, threat, and appreciation of the data. Criticism may be very salient when it is followed by a relevant suggestion.

Keywords: *possibility, epistemicity*

Introduction

Language is used for a wide variety of functions, e.g., to present information, to express attitudes or to call for some kind of action, and simple unmodified declaratives are inadequate for those subtle and significant functions. People qualify their commitment to assertions, soften and hedge their judgments and orders, boost and strengthen the expression of their feelings and opinions in a variety of ways. They use linguistic devices to express their attitudes to the content of their assertions, and to reflect their perception of their relationship to the readers (Holmes 1982: 9). Among these devices are modality markers such as modal auxiliary *may*, perimodal *certainly*, *probable* and verbs of perception *seem*.

Quirk et al. (1985: 219-239) distinguish intrinsic (deontic) from extrinsic (epistemic) modality. Intrinsic modality reflects human control over events and includes permission, obligation and volition. Extrinsic modality reflects human judgment of what is or is not likely to happen and covers possibility, necessity and prediction. In addition, Perkins (1983: 6-12) argues that modality is concerned with attitudes towards events and propositions; the former are based on laws of society and the latter on laws of reason. The intrinsic-extrinsic distinction is similar with Ney's (1980: 38) root-epistemic distinction, Halliday's (1976: 204; 1985: 337) idea of modulation and modality, and Huddlestone's (1988) deontic-epistemic distinction. It may be epistemic, i.e., qualifying

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commitment to the truth of a proposition, or deontic, i.e., expressing obligation (Lyons, 1977: 750; Palmer, 1976: 42; Givon, 1993: 169).

Epistemic modality, reflecting attitudes towards the truth of propositions, is modality in Halliday's functional grammar, a stand between the positive polarity (definite *yes*) and the negative polarity (definite *no*). It is an important feature of language and a privileged area in text analysis (Fowler, 1986: 132). It offers a choice to a writer when he formulates a claim: to be totally or less than totally committed to the truth of his claim (Simpson, 1993: 47). An assertion such as *It's raining* expresses the writer's proposition and at the same time his commitment to the truth of that proposition, i.e., the writer knows the truth of his own proposition. For this reason, he will not make an assertion such as *It's raining but I don't believe it*, where the second part contradicts the assertion in the first. On certain occasions, however, the writer may make an assertion such as *It may be raining*. This assertion shows that he is not committed wholeheartedly to the truth of the proposition. He modalizes the commitment to some degree by expressing a judgment or assessment of the truth.

This study was intended to describe how the medial level of epistemic modality in expressed in the discussion sections of research reports.

Review

Modality

Modality is an expression of commitment or attitudes towards an event or a proposition and assumed to have three levels (high, median, and low). They are especially reflected on modal auxiliaries. An approach to modality is the interpersonal approach to language use that is characterized by the compositional process of discourse, i.e., the interpersonal function of language. Modality (Halliday 1976: 198) is concerned with

> the establishment of social relations and with the participation of the individual in all kinds of personal interaction. Language, in this function, mediates in all the various role relationships contracted by the individual, and this plays an important part in the development of his personality.

Within this function, modality is related to "speaker's comment" that indicates the position taken by the speaker. Modality is seen as the "social role" component of language. Lee (1992: 136), however, uses the term speaker intrusion to refer to speakers' comment and modality to refer to the very wide range of meanings that are involved in this process. Modal expressions comment on the content of an utterance. As comments, modal expressions are non-propositional in that they lie outside the major information carrying components of the utterance. Modality, however, is the realization of the ways in which speakers convey attitudes to and judgments on the nature of the propositions they utter.

In written language, this approach views modality as a component in the interpersonal metafunction of text, i.e., the interaction between the writer of the text and its intended audience, which carries a heavy semantic load, is important in the realization of role relationships between addresser and addressee. Mood selection is pertinent to the question of involvement and detachment (Hassan 1985: 41). In the medical case history texts, for example, there are two relationships: that negotiated between writer and reader, and embedded within it, the relationship between specialist and patient.

Several definitions reflect the interpersonal approach to modality. Simpson (1993: 47) defines modality in the following way:

> Modality refers broadly to speakers' attitude towards, or opinion about, the truth of a proposition expressed by a sentence. It also extends to their attitude towards the situation or event described by a sentence.

This definition mentions speakers' attitude to refer to speakers' comment and two objects to which the attitude is directed: the truth of a proposition and a situation or an event. These two objects of attitude correspond to the two major types of modality: epistemic and deontic modality respectively. Fowler (1982: 216) gives a similar definition of modality. He refers to modality as

> the means by which people express their degree of commitment to the truth of the propositions they utter, and their views on the desirability or otherwise of the states of affairs referred to.

This definition specifies attitude as commitment and desirability and two objects of these two types of attitude: the truth of the propositions and states of affairs. It also corresponds to the two major types of modality as mentioned above.

The definitions above imply the functions of modality, i.e., modality enables the speaker or writer either (1) to qualify the propositions expressed by his sentences with respect to their validity, truth, or factuality, or (2) to indicate obligation and permission of acts performed by "morally responsible agents" (Lyons 1977: 823) with reference to norms. These two functions also correspond to the two major types of modality. Holmes (1982: 11) comments on the degrees of certainty concerning the validity of a proposition:

> Devices used to signal different degrees of certainty concerning the validity of the information asserted may also serve to increase or decrease the illocutionary force of speech acts: to boost or attenuate the force of an assertion in a context of argument, for example, to soften or strengthen the force of a criticism or a compliment.

The devices to strengthen the force are referred to as boosters, which express certainty, whereas those to decrease the force as downtoners, which express probability and possibility. And at a more abstract level such variations in the illocutionary force of speech acts signal degrees of solidarity and intimacy, deference and politeness, perhaps in all societies (Brown and Levinson, 1978).

Modality Values

Modality is assumed to have values. These values refer to the degrees of strength. Foley and Valin (1985: 213-215) refer to modality as the variable of actuality of the event, whether it has been realized or not and view it as a binary distinction between realis and irrealis poles. Between these poles is the following continuum: real - necessary - probable - possible - unreal. The middle points in this scale are expressed in English by the modals *must, will, can* and *may*. They also argue that modality characterizes the writer's estimate of the relationship of the actor of the event to its accomplishment, whether he has the obligation, the intention, or the ability to perform it. When an actor is obliged to carry out an action, one might infer a high likelihood that the event will become a reality, but when he is merely able to perform it, one would infer no such probability.

Another scale of modality values is proposed by Halliday (1985: 337) with three values or levels of confidence, as given in Table 2.2. The table mentions three modality values (high, median and low) and two types of modality, epistemic probability and deontic obligation, each of which covers three values or degrees. These values are particularly marked by the following modals:

Table 2.1 Modality Values

Values	Probability	Obligation
High	Certain	Required
Median	Probable	Supposed
Low	Possible	Allowed

the high value by *must, ought to, need, has to, is to*; the median value by *will, would, shall, should*; and the low value by *may, might, can, could.* Holmes (1982: 13) also proposes the same scale of certainty: certain, probable, possible.

Types of Modality

An assertion may be "epistemically modal," i.e., "the speaker explicitly qualifies his commitment to the truth of the proposition." Simpson (1993: 50) provides the schema in Figure 2.1 about the ways in which modalized assertions differ from categorical assertions.

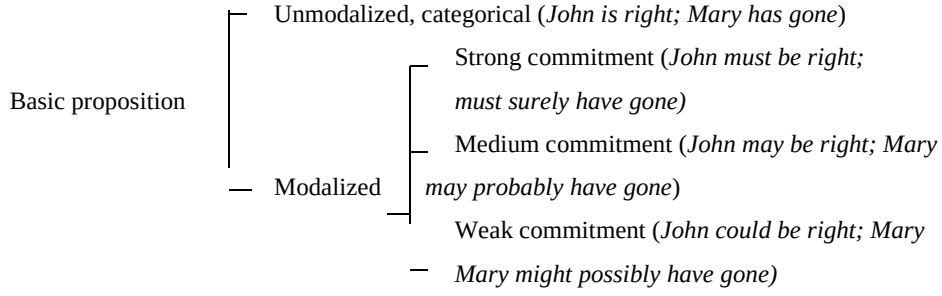

Figure 2.1 Modalized and Categorical Propositions

On the other hand, assertions may be "categorical", which are "straightforward statements of fact." These assertions are "epistemically non-modal," i.e., the "speaker is committing himself to the truth of what he says" (Lyons 1977: 797).

There are four modal systems of English. Deontic modality or root modality, first of all, is the modal system of duty, as it is concerned with a speaker's attitude to the degree of obligation attaching to the performance of certain actions. Clearly, the deontic system is of crucial relevance to the strategies of social interaction, especially to tactics of persuasion and politeness, as also exhibited by linguistic features of persuasive discourse in advertising language. Root modality is concerned with the speaker's observation about whether he or others have permission, duty or obligation to perform particular actions. Deontic modality is concerned with the necessity or possibility of acts performed by morally responsible agents (Lyons 1977: 823). Most obviously this can be related to the seeking and granting of permission and to the obligations that we impose on one another or that we feel are imposed on us by social or moral norms; involving the issuing of directives and is associated with notions of such as permission or obligation (Lew 1997: 146). Palmer sees deontic modality as discourse-oriented modality.

In making an epistemic judgment a speaker always draws on some kind of evidence as the warrant for the judgment. The warrant is sometimes co-textual (literally recoverable from the preceding or following text) but just often involves contextual assumptions (the speaker's perceptions about the context that he may expect the

hearer to share) or background assumptions (general or particular knowledge the speaker has and may assume is common to him or his hearer) or any combination of these. The warrant may also involve inferences that the speaker draws from those assumptions, and he may expect the hearer to share these too (Brown 114). Present judgments on the likelihood of rain in the future may be expressed by *It may rain* or *It might rain* with psychological distancing (rather than temporal). It is also possible to present judgment on the likelihood of a past event having happened by *It may/might have rained* where the past time reference is achieved by *have*. This sentence is non-factual. It reports judgment, in the present, about the possibility of a past event and does not tell a fact whether it did or didn't rain. Epistemic modality is by definition subjective. It refers to any utterance in which "the speaker explicitly qualifies his commitment to the truth of the proposition he utters … is epistemically modal, or modalized sentence" (Lyons 1977: 797). The speaker is the source of epistemic judgment.

The schema in Table 2.3 about modal concepts would help summarize the function of the modal systems introduced in this section. The box enclosures are attempts to capture interrelatedness of some categories, and the non-linguistic concepts which each category represents are explained to the right (Simpson 1993: 51).

Table 2.2 Modal Concepts

Modal System	Non-linguistic Concepts Represented
deontic	obligation, duty, commitment
boulomaic	desire
epistemic	knowledge, belief, cognition
perception	perception

In discussing epistemically modal assertions, Lyons (1977: 750) distinguishes between "objective epistemic modality" and "subjective epistemic modality." The former states an "unqualified assertion of the possibility of a proposition", while the latter qualifies "the assertion of the factuality of the proposition." Lyons (1977: 799-800) makes a further distinction between the two kinds of epistemic modality. The objective, epistemic modality is "qualified with respect to a certain degree of probability," i.e., the speaker is committed by the utterance of an objectively modalized utterance to the factuality of the information that he is giving to the addressee: he is performing an act of telling." On the other hand, "the very essence" of subjective epistemic modality is "to express the speaker's reservations about giving an unqualified, or categorical 'I-say-so' to the factuality of the proposition embedded in the utterance." A subjectively modalized assertion is not an act of telling; its "illocutionary force is similar to that of questions." The illocutionary force of *probably* in 'You probably need to arrange the pictures in the proper order' reveals self-questioning, a knowing strategy on the part of the speaker. A modality analysis, therefore, provides insights into this speaker's cognitive skills. Huddlestone (1988: 107) introduces the informal term residue for which is left of the meaning expressed in an utterance of the clause when the modality is abstracted away. He argues that the two most central notions in modality deal with possibility and necessity and that there are two prototypical kinds of possibility and necessity: epistemic (pertaining to knowledge) and deontic (binding).

Writer-Reader Interaction

Writers of scientific discourse construct knowledge as members of a scientific community of a particular discipline and, therefore, should obey the interactional conventions. In knowledge construction, they should obey epistemological conventions. This section deals with the epistemological and interactional aspects of scientific writing.

In writing, although characterized by detachment from the reading public, the writer anticipates probable reactions and writes accordingly. This anticipation leads to the writer's attempts to the interactional aspects of writing such as critical judgment and politeness strategies (Renkema, 1993: 129), which may be manifested in modality (Celce-Murcia and Larsen-Freeman, 1983: 85; Butler, 1988: 119-153; Carretero, 200: 1-12).

The anticipation of the potential readership requires scientific writing to be conducted with the highest degree of responsibility in the language-and-knowledge relation; the responsibility to communicate ideas well, to offer the readers honest and reasonable grounds, to adjust their beliefs and ideas to the world of available knowledge, as Gage holds (1991: 162):

> Responsible writing is that in which the writer has attempted to satisfy the unique demands of a rhetorical situation by thinking about her own ideas, those of her audience, and the quality of the reason she might use to bring her readers and herself into earned agreement.

This responsibility implies critical judgment, i.e., the adequacy of the support for the conclusion or measurement of the degree of one's convictions to match the quality of the reasons. Critical judgment orients the idea of knowing to the scientific community, as suggested by Gage (1991: 164):

> In other words, the kinds of reasons we create and the degrees to which we accept them are not conditioned solely by rules and private understandings but are subject to the convictions, reasons, experience, and values of those other members of the discourse community in which we interact. So that what one believes is a result of thinking that we have done together.

The assumption is that new reasons with the potential to change the degree of conviction are always possible. This joint venture treats reasons as qualitatively dependent on the assumption of the audience, the language in which they are expressed. It is a process of putting one's ideas into the context of other ideas, for the purpose of finding out whether they are supported by adequate reasons. This process makes one realize that what one knows is only as good as the quality of the reasons one can offer, and that this quality must be judged in terms of the beliefs and needs of an audience that is able to assess a writer's reasons and offer good reasons of its own. Claims are flexible, contingent, and open to change and that a good reason is determined by communal, negotiated acts of assent, and involving the inquiries of all participants in a scientific discourse community (Gage, 1991: 165). This is the contingent nature of argumentative discourse that is motivated by the desire to produce shared knowledge or understanding when specific differences in knowledge or understanding exist, when there is something to unravel, solve, resolve, and interpret (Carden, 1988: 37). Thus, the basic rhetorical situation may be viewed as the contributions of the audience (a question at issue and assumptions) and the writer (stance and strategy) to the communal situation (169).

Critical judgment may be realized through hedging and there has been a growing interest lately in hedging, or modalization in Simpson's (1990: 91) terminology. Dubois (1987) in Markkanen and Schroder (2000: 7) argues that "it has been shown that scientist can unobtrusively inject his personal views into his communication" by using linguistic items that express uncertainty or impreciseness. Similarly, Butler (1990: 139) shows the importance of modals in English biological and physical texts, in which they "serve the weighing of evidence,

and more particularly in making generalizations about what is possible in the behavior of the universe, on the basis of observation of what actually happens. This hedging is connected with the fact that scientific writing obeys some similar mechanisms as ordinary communication does. The assumption (Markkanen and Schroder, 2000: 6) here is that

> science is not only content; that is scientific texts are not only content-oriented and informative and informative but also aim at convincing and influencing their audience … built on *pragma* and on *docere* (instructing, informing) but also on *delectare* (entertaining) and *movere* (moving, enchanting).

With this assumption, they add, the formulation of a scientific text should go into the subject matter (*pragma*) and emphasize the reliability of the author (*ethos*) and also move the reader emotionally (*pathos*). The last two are closely connected with the expressions in the text, including hedging; but content and form are inseparable. Hedges are "a textual phenomenon" and a text "gets them through the author-reader interaction. Simpson (1990: 91), supporting the view of modalization in the writer-reader interaction, holds that the significance of modalization is in that it "directs the readers to evaluate the information". This is, to some extent, controlled by culture and shared educational background (Spillner, 1974: 67).

In terms of reader-writer interaction, the writer adopts for himself the role of a producer of ideas and assigns to the readers (fellow scientists or a scientific community) the role of receivers. The concept of role assignment is made possible by the fact that there should be in principle in any communicative event more than one participant and, therefore, there must be a role for each of them to play. These roles are of two kinds, social and interactional roles. The former is dependent on the participants' relatively static social statuses as the basis for the prediction of the use of certain forms of language. The latter kind is, on the other hand, more dynamic since the participants can play the different roles interchangeably. It is often the choices of certain forms of language that the participants play their roles. This kind of role is firmly tied to the immediate interactional statuses of the participants. Halliday (1994: 68) refers to the interactional role as "speech role". In written discourse, however, these roles are less obvious than that in speaking because the participants are separated from each other. The writer and reader adopt such roles and modify their language accordingly.

There is mental negotiation in this interaction. The writer wants to be assured that it is the meaning and the effect intended that has been created. He considers possible responses from the reader such as confirmation or disagreement or various shades of disagreement. This consideration amounts to reshaping or modalization of ideas. Interlocutors expect each other to provide responses to what they hear - to confirm, disagree with, or simply signal presence or understanding. These responses need not be very long and elaborated. Such practices are called negotiation (Martin 1992: 67). Negotiation also refers to the fact that "interpretations are jointly negotiated by speaker and hearer and judgments either confirmed or changed by the reactions they evoke" (Gumpers 1982: 5). It is enhanced by the inherent exchange structure of spoken discourse where "the form and content of talk is continuously reshaped by the co-participants, through the ability to create alignments and suggest or impose certain interpretations." It is, of course, not possible for the reader in written discourse to ask for clarification or indicate his understanding which will affect the on going interaction. There is, therefore, no direct negotiation. Negotiation in written language is brought about by the writer's need to take into account different situational variables of the context in which his writing will be read - who is going to read it, what the reader wants to know, etc.

Writers carefully weigh the level of their commitment depending on the epistemic status of propositions as accredited facts or interpretations, and on the anticipated effect this commitment is likely to have on readers'

responses (Hyland 2000: 9). The writer wants to be assured that it is the meaning and the effect intended that has been created. He considers possible responses from the reader such as confirmation or disagreement or various shades of disagreement. This consideration amounts to reshaping or modalization of ideas. These considerations are an important dimension of academic discourse and a principal way that writers can use language flexibly to adopt positions, express points of view and signal allegiances. They also represent a major contribution of the social negotiation of knowledge and writers' efforts to persuade readers of the correctness of their claims, helping them to gain community acceptance for their work as a contribution to disciplinary scholarship and knowledge.

Related to weighing the evidence are hedging and mitigation. Markkanen and Schroder (1992; 2000:3) see hedging in scientific texts as "modifiers of the writer's responsibility for the truth value of the proposition expressed or as modifiers of the weightiness of the information given, or the attitude of the writer to the information". The devices for hedging include, e.g., impersonal expressions, passivisation, and modal verbs and adverbs. In the widened concept of hedging, the concept of epistemic modality cuts across the area of hedging. It is defined as qualification of commitment to the truth of the proposition expressed (Lyons, 1977: 797). Coates (1983: 49) sees epistemic modality as part of hedging. Mitigation refers to "an intentional softening or easing of the force of the message", a modulation of the basic message intended by the speaker (Fraser, 1975: 14). It is modification only of effects that are unwelcome to the hearer, e.g., the force of a criticism, not of praise (though possible in principle). Mitigation involves a reduction in the unwelcome effect of what is done, while politeness involves a judgment whether the" what" and the "why" the speaker has done something is appropriate.

Another related phenomenon is politeness, which may be viewed as a strategy to maintain the writer-reader co-operation on the basis of (1) negative face (freedom of action and freedom from imposition), and (2) positive face (desire for appreciation and approval) (Brown and Levinson 1987: 61) or to be unimpeded and to be approved Meier (1996: 346). Politeness, a state that one expects to exist in every interaction, is defined by Fraser (1978: 10) as "a property associated with an utterance in which, in the hearer's opinion, the speaker has neither exceeded any rights nor failed to fulfill any obligation". Politeness is also seen a sign of respect or deference for a balanced interpersonal

Methods

Data collection

In general, the approach of this study is qualitative, aiming at in-depth understanding of the features of epistemic modality. These features are the evidentials that serve as the ground for epistemic possibility and the intentions that motivate epistemic possibility.

The data were notional units of evidentials and epistemically modalized statements. The evidential unit, which was presented in any level of linguistic units (phrases, clauses, sentences) in the sources, was any linguistic unit intended to be a reason, a ground, or a support for the source makers' epistemically modalized statements. The data of epistemically modalized statements were sentential units with the epistemic operators as described in 3.4 about data collection. They were collected from the discussion sections of research reports.

The discussion section of a research report is the central part in scientific writing (Tuckman, 1975: 350; McMillan, 1992). The sources of the data are the finding-and-discussion sections of dissertations. The selection of dissertations to be the sources of the data was based two criteria. First, they meet the requirement of scientific rigor in that they were prepared through a scientific method in analyzing the issues through reviewing the relevant

theories, data collection and analysis, and interpretation of the findings to enter the universal body of knowledge. This scientific rigor was tested through the seminar classes, the proposal seminar, and the preparatory and final exam. It was reinforced by continuing consultation to the qualified advisors. Second, they fulfill the requirement of resourcefulness. They provided the data of evidentiality and epistemic modality in different types. They also provided the evidence to the efforts in distinguishing epistemic modality from other types of modality, and, therefore, contribute to the validity of the epistemic data. These detailed sections ensured in-depth understanding through the cyclical search for recurrence of evidentials, epistemic operators, and different shades of meanings. Third, they were written by Indonesian graduates of highest educational level (S-3 program), who are lecturers of English at the university level and whose English competence could be considered to have reached the advanced level. These writers are the graduates of the department of English Language Teaching at the State University of Malang (UM).

The findings-and-discussion sections to serve as the sources of the data were taken from the accessible dissertations of different academic years. They were finished at 1997 (1 copy), 1998 (1 copy), 1999 (1 copy), 2001 (two copies), 2003 (2 copies), and 2004 (2 copies). There were nine copies, but, for the sake of brevity, one source is appended. The other sources are bound separately.

Data interpretation

The data were interpreted in the following ways. The first step is operator-by-value interpretation. The epistemic operators resulting from classifying modality operators were attributed with the corresponding levels of confidence (*possibility*, *probability*, or *necessity*). For this purpose, the principle of epistemic validity was adopted, i.e., the epistemic status applies to a phenomenon at the present time. This principle, for example, treated *would* as valid for the expression of a phenomenon at the present time and assigned *probability* to this operator. This principle also treated would as valid for the expression of a phenomenon at the past when, by the tense sequence rule, it was used for a phenomenon at the past; *certainty*, therefore, was attributed to this operator. This principle requires that epistemicity of a past event be presented with an epistemic operator followed by *have* (operator of a past event) and the past participle.

The subsequent step was the interaction-oriented interpretation to suggest how an epistemic claim may have been used to reveal some awareness of the supposed writer-reader interaction. Certain features in the three levels of epistemic confidence were taken as interactionally motivated.

The second step was epistemic-by-evidential analysis to relate different types of evidentiality to the three epistemic levels of confidence. Different categories of evidentials (direct-observable; direct-unobservable; indirect-observable; and indirect-unobservable) were found to be inter-related and this inter-relation led to an epistemic level of confidence. Within these occurrential patterns of evidentiality and epistemic modality, unobservability and absence of a causal design were sufficiently responsible for epistemic modality.

Instrument

The key instrument was the investigator provided with some knowledge of the relevant literature to help him to be sensitive to the required data. The other instrument to be shared in the investigator triangulation was Palmer's (1987) framework of deontic, epistemic, and dynamic types of modality and Halliday's (1985) operators of epistemic modality.

The modality operators were limited to Halliday's (1985: 337) proposal of epistemic modality operators *may*, *might* and *could* for the low value (possibility). The presence of epistemic modality was strengthened with the periphrastic epistemic operators *possible* and *seem.*

Investigator triangulation was adopted for research credibility, a quality proposed in research (McMillan, 1992: 217; Lincoln and Guba, 1985). It involved a senior lecturer of syntax and semantics with a master's degree in linguistics two graduates with the doctor's degree in English Language Education with the relevant interests.

Results

Epistemic possibility is the low value of epistemic modality that depends on the interpretation that is enriched by some explicit immediate context, paraphrases, and some reasonable motivation. This part presents the findings and discussion of some features in epistemic possibility.

1. Compatibility and Optionality

In the following examples, epistemic possibility is indicated by *may*.

1. Such introduction **may** not help to frame the problems for the English-speaking readers.
2. English-speaking readers **may** be confused with such an essay because the focus of discussion is not clear.
3. This **may** be due to the effect of formal education in the independence era, especially in the New Era.

The possible effect in (1) is reasoned out from an "irrelevant" introduction, and an unclear discussion ("focus of discussion is not clear") in (2). The cause of scarcity of critical thinking in (3) is speculated on the basis of the characteristics of the New Era, such as "students memorize details than think of them". An epistemic statement like (1) can be paraphrased by "It is possible that this irrelevant introduction does not help to frame the problems for the English-speaking readers". Epistemic possibility with the same operator can be authority-based.

4. Since formulation of title describes the selection of a topic (cf. Taft et al., 1962; Reid, 1988; Reid, 1992), it **may** describe the thought of the writer on the topic.
5. Oxford (1989) and Oxford and Ehrman (1995) **suggest** that the Asian culture promotes rote memorization and study of language rules. This **may** explain why such memory-related strategies were quite popular among most of the learners in this study.

They reveal that epistemic possibility applies to causal reasoning that relates direct evidentials (the findings) to personally unobservable phenomena provided by personal background knowledge (1, 2) or an authoritative assumption (5), or an observable phenomenon (experience) in (3). There is semantic compatibility, first, between the finding and the unobservable phenomena in (1, 2); second, between the finding and personal experience in (3). In (4), no finding is yet mentioned and causal reasoning relates two unobservable phenomena as authorized possibly to guide data commentaries. In (5), the epistemic possibility operator might qualify "explain" to introduce a causal relation and "the Asian culture" is assumed without any account how certain Asian cultural traits possibly relates to the finding.

Epistemic possibility can be made tentative by modal operators *might* and *could*, to show psychological distancing.

6. Such introduction **might** not help to frame the problems for the English-speaking readers.

7. This problem **might** have been caused by the position of the second 'who', which is far away from the noun as antecedent, 'the beginner'.
8. This **could** be a sign of ignorance or that the reader wanted to get the meaning of unknown word as fast as possible.

These (*might* and *could*) are the tentative forms of epistemic *may* … to express a lower degree of possibility" (Palmer, 1988: 119). They produce "a psychological distancing effect" (Brown, 1991, 124). Such an effect may be found in a main verb through grammaticalizing time relations, e.g., the past tense to refer events prior to events at present. This is interestingly found with the same proposition (1, 6), where variety might be more reasonably suggested rather psychological distancing. There is accumulation of psychological (*might*) and temporal distancing (*have*) in (7), which is found within the same source. In (7) there is the past marker *have* and it can be paraphrased by 'It is tentatively possible that this problem was caused by the position of the second 'who', which is far from the noun as antecedent, 'the beginner'. Examples (7, 8) enrich the patterns of epistemic possibility: between two observable phenomena in (7), and between a finding an unobservable phenomenon in (8). Again, the investigator's background knowledge plays its role in assigning compatibility to a causal relation; between a finding (mistranslation of "who" by "*siapa*") and another finding (distant "who"), although this distant "who" doesn't seem to warrant the possible causal relation; and between the finding of "this" (the first meaning among other meanings in the dictionary) and an unobservable event "as fast as possible" in (8).

There are non-auxiliary operators of epistemic modality and they are worth exploring for enrichment to the patterns of evidentiality and epistemic modality. One of them is possible.

9. The **possible** explanation of the problems identified when guessing strategies were conducted was that there were limited contextual clues surrounding the problematic lexical items.
10. This recurring pattern among EFL learners **can** be accounted for by at least two **possible** explanations.
11. One **possible** factor is culture.

In (9) *possible* modifies explanation, which can be paraphrased by 'It is possible that the limited contextual clues explain the problems', where *explain* is a causal relation operator between a finding of "the problems" (i.e., mistranslations) and "limited contextual clues". With no account available for identifying the limited clues, "limited contextual clues" is unidentified or unobservable or not found. In (10) *possible* is epistemic in the following ways: first, it questions the presence of certain Asian cultural traits, although the subjects are assumed by region (Indonesia) to share the Asian culture; second, if present, whether they cause the finding of the recurrent The quantitative approximator "at least" takes the number as tentative. There seems some obscurity in the co-occurrence of "can be accounted" and "possible explanations". As far as an account is an explanation for the same causal relation, it could be that, first, *can* is synonymized with *possible* to share the epistemic value, regardless of the neutral-epistemic typology for the sake of variety of modality operators in such a reasonable context as one sentence, or, second, synonymized to share the same neutral (non-epistemic) possibility; or, third, distinguished for different purposed. This obscurity results from Palmer's (1988: 113) arbitrary assignment of neutral possibility to *can* and epistemic possibility to *can't* and *could*. There is no syntactic problem in paraphrasing *can* for neutral possibility in "It is possible for the recurring pattern among EFL learners to be accounted for by at least two possible explanations". This paraphrase seems more acceptable than "It is possible that the recurring pattern is accounted …" and takes the third option. A possible interpretation is, therefore, that

neutral possibility applies to the activity of "accounted for" and epistemic possibility to the result of that activity ("explanation"). This would be like this that it is possible to account a finding, but whether the account is possible is a different problem. This process-product distinction is adopted in this specific example where the process seems synonymous with the product, or where the process introduces the product in causal reasoning. The product ("possible explanations") in (10) is consistently repeated in "possible factor" in (11), which can be paraphrased by "It is possible that culture is a factor for rote memorization" (Examples 5, 10, and 11 are contextually related).

2. Deontic-Epistemic Co-existence

The analysis of non-auxiliary epistemic operators reveals epistemic harmony, e.g., *quite-possibly*, *perhaps-possible*, *perhaps-would*, and cross-typological *can-perhaps.* In (54), there is the harmony of "perhaps" and "possible", confusion between factivity and non-factivity, and distancing.

12. Thus, they only learned the formal structure necessary for writing …. Formal learning, however, according to Krashen's monitor theory, has a limited function in language production. This condition **made** the students produce a piece of writing with insufficient linguistic knowledge to write with….This is **perhaps** a **possible** answer to the question why a four semester learning time seemed to have a little effect on moving the students to a better writing achievement.

There is epistemic possibility when *perhaps* is paraphrased by 'It is possible that the theory is a possible answer'. In this example, "it" refers to the finding of "formal learning" as indicated by the form-oriented course outlines and the instructors' adherence to the course outlines and as confirmed in "Thus, they only learned the formal structure necessary for writing"; "it" also refers to the theoretical model to explain the finding of "seemed to have a little effect" in a causal relation. There is also epistemic possibility when "a possible answer" is paraphrased by "It is possible that it answers the question". In this concord, the same possibility operators of the same epistemic value "reinforce each other" (Halliday, 1976: 194). The operator *seemed* is existential to refer to the finding that "Yet, the progress was so little that in general it could not only be proved by statistical evidence after three semesters". This is an instance of epistemic possibility generated from the temporal sequence of "formal learning" and "a little effect" and "formal learning" that is guided by the theoretical model. Surprisingly, the epistemic causal relation is preceded by the categorical causal relation ("made the students produce"). There variety between factivity ("made") and non-factivity (mutually reinforcing "perhaps" and "possible"). Instead of breaking the principle of innocence by accusing variety of inconsistency or incongruence, one may probe different purposes, i.e., the writing and the truth of the causal relation. The categorical (unmodalized) relation is her personal responsibility in such a case as the temporal sequence of two events (findings) of the same subjects with such indication of form-oriented course outlines and confirmation as one given by such responsible witnesses as colleagues and such a widely accepted theory as SLA proposed by such an accredited authority as Krashen. She wouldn't, however, impose her responsibility upon the readers. There is probably neither variety nor inconsistency. She would assume her responsibility as an individual investigator without neglecting the readers' conclusion about the findings as presented. The findings are presented convincingly, the investigator has made the conclusion, and the readers are interactionally invited to have their own. This would be a good example that allows one to distinguish the deontic (normative) power of the scientific community and the epistemological power of the evidentials in the expression of a causal relation. The causal relation is reasonably factive in that particular context although unsympathetic with the Humean causation principle of constant regularity; it is also

reasonably epistemic for allowing different conclusions and politeness. Skepticism doesn't seem to be always associated with epistemic modality.

3. Indicative-Epistemic Distinction

An exploration of non-auxiliary operators of epistemic possibility clarifies the existential-epistemic distinction. For example, existential *seem*, as found in (12), is getting clear in the following contrast between existential *seem* in (13) and epistemic *seem* (15, 16). It also reveals that "suggest" is existentially indicative (presenting the finding) and less strong that other indicative verbs such as "indicate" and "show".

13. Experiences in writing articles that they gain from school writing assignments and from outside school--journals, seminars, research and the like--**seem** to be influential **than** learning the conventions of English essays with lack of exercises in writing essays.
14. This **suggests** that experiences in writing (academic) essays affect them to write academic essays in English.
15. By using '*hal ini*', '*hal itu*', 'hal tersebut', or even '*kebenaran ini*' or '*pendapat ini*' in the translation, the subjects **would seem** to know that 'this' refers to the truth about an object falling down from a high place.
16. Social status **seems** to be another **logical** cause for the diversity of strategies.

There are two pairs of findings in (13): first, "Responses to the questionnaires show that those who write academic essays according to the convention of English rhetoric are the ones who are experienced in writing academic essays"; second, "on the other hands students who developed their ideas in indirect way are the ones who lack of experiences in writing (academic) essays". Since all the students have learnt the convention (as also confirmed by the interview), the emerging factor is conclusively "experience" and *seem* is existential and can be replaced by *is*. This factor recurs in (14), where a causal relation is introduced by "suggests" and "affect". Examples (13, 14) illustrate how factivity ("affect") is prompted in a mild way ("seem" and "suggests") and how the power of the deontic norm (politeness) may be distinguished from the power of the evidential (the finding) in the same way in (12). The interview to explore this congruence might have been grounded on this preconceived answer and the assumption of other factors *ceteris paribus*. By contrast, in (15), without *would*, *seem* would ease epistemic reading because there has been no strategy to distinguish between the subjects who know and who do not know when both of them have the same translation. It is a good case where two epistemic senses are "cumulative in meaning" (Halliday, 1976: 194). Example (16) mentions an unobservable phenomenon ("social status" for "money") questions whether "the facilities" that money can buy really account for the diversity of learning strategies, as warranted in "Having enough money, learners who came from high social status could gain more access to facilities which enhanced their English proficiency: TV sets, tape recorders, cassettes, supplementary books, computers, and even additional English courses from private tutors". There is no evidential about the socio-economic classification and the facilities of a certain socio-economic group of students. With no authority involved, this is a genuine personal interpretation of a causal relation where relevance is offered by the semantic field of the finding ("diversity of strategies", "facilities", "money", "social status"), making a point in the economic view of learning. It might also be inspired by some personal experience or observation of a similar phenomenon.

The existential-epistemic distinction may not readily lead to interactional respect and might impress triviality. In the following examples, this impression is found.

17. Again, since there **may** be no auxiliaries in Bahasa Indonesia, compared to that encountered by English acquiring children, the task that Indonesian acquiring children have to do is very simple.
18. Mika's negative construction development is definitely simpler than that of English acquiring children since, as has been mentioned previously, there **seem** to be no auxiliary verbs in Bahasa Indonesia.
19. This is understandable since in Bahasa Indonesia there **are** no auxiliary verbs to which negative markers should be attached.

There are two judgments. Epistemic judgment is articulated by "there may be no" in (17), "seem to be no" in (18), and existential (factive-categorical) judgment by "there are no" in (19). In these examples, there two types of power: epistemic-personal grammar and factive-Indonesian grammar. Example (63) comments the finding of the intra-sentential negative markers "*nggak*, *belum*, *jangan*, and *bukan*" in child language acquisition of Bahasa Indonesia, the formal treatment of the finding "mau" and "boleh" as "simple predicates", and the personal viewpoint ("regarded to behave like English modal auxiliaries"). This indecisiveness is the source of the epistemic possibility in *may*, which "lies between yes and no" (Halliday, 1986: 335). The indecisive existence of "auxiliaries" recurs in the indecisive existence of "auxiliary verbs" introduced by *seem* in (64) due to the indecisive classification of the findings as. Surprisingly, the formal treatment is further made explicit in (65), where "understandable" comments a syntactically uncomplicated process in acquisition of negative markers and is followed by a reason. This reason is a language rule, which is expressed by "should". A theory may postulate its proper methods categorically, and these methods may be seen as obligatory by upon its followers, but it is questionable whether a theory (Indonesian grammar) lays an obligation upon itself. For this reason *should* is complementary to *are*. In these examples, there is a judgment route: indecisive "seem" and "may" to decisive "are no" in the light of Indonesian grammar. It is possibly unreasonable to assign politeness or indirection to (67, 68); the power of the references is clear formal category and personal viewpoint). The causal relation is a different problem. The attribution of the finding ("simple" acquisition) to Indonesian grammar is worth commenting, i.e., the causal relation is factive although the effect (child acquisition ease) doesn't seem to follow the cause (formal ease). An assumption of exemplary grammar by adults, if any, would sound trivial in natural settings. The first point possibly intends to express some indirection, i.e., possibility for factuality, and the second point may pragmatically imply that those simple predicates are classifiable as auxiliaries. In this case, the investigator might intend to leave his epistemic-personal interpretation for the standard grammar. In contrast to epistemic-interactional *perhaps-possible* in (12) and existential-interactional *seem* in (13) and interactional-falsified *seem* in (20 – 23), the investigator might want to express his respect to the public by his decision in adopting the standard grammar where "there are no auxiliaries".

4. Falsified-Epistemic

Seuren (1985: 390 – 402) argues that "In fact, modal statements are not true or false *per se*, as Quine has it, but contingently …. it is inappropriate or unacceptable … to make a modal statement about something which is already known to be true". This is not obeyed in the following example where *seem* is immediately falsified or disclaimed.

20. In terms of syntax errors, however, it **seemed** that they did not develop their ability in constructing structurally correct sentences.

Example (20) comments the finding that "the number of syntax errors increased as course level increased", but this comment is denied in that "the students showed their syntax development" and "it was obvious that the number of complex sentences increased as course level increased". The denial results from the switch of viewpoint, i.e., syntax development is determined by the number of complex sentences and not from syntax errors. This kind of judgment revision is reinforced by a concessive sense in the following examples.

21. Thus, although the finding by Huda (1997) **seems** to contradict the finding of this present study, the explanations offered for the two phenomena **basically** stand on the same ground, namely that the better learners are more automatic in executing language processing, more aware of their potentials, and thus more efficient and systematic in their selection of strategies.
22. While at a glance this **seems** to be superiority, a further scrutiny **will** make it clear that this actually represents a barrier for the beginners.
23. Even a clause which **seemed** easy to understand **might** have turned out to be a real problem.

This revision strategy results in pairs of counterparts: *although contradict* vs. *basically the same ground* in (21), *while superiority* vs. *actually a barrier* in (68), and *even easy* vs. *turned out a real problem* in (23). In (18), the authoritative finding is that "the better learners use fewer strategies than the poorer ones, as his study indicated" and the current finding is that of the diversity of strategies among better learners. The contradiction between "fewer" and "diversity" is settled in "the same ground … efficient". Falsification works through a deeper analysis in (228) and a finding in (69). In these cases, there are two steps of data commentaries where *seem* introduces a hasty or first-sight judgment (*prima facie* possibility) to be followed by a factive-decisive judgment. There is de facto no epistemic sense in *seem* and it can readily be substituted by a non-assertion for negative factivity. Epistemic possibility introduces non-factivity that lies between negative factivity and positive factivity. This strategy would be attributed to the interaction between the deontic-interactional power and the evidential power. It should be fair to consider this interaction rather than conventionally assume the supremacy of the deontic power upon the evidential power. The investigators assume their responsibility in their analyses in the form of the factive-decisive judgments but they do not want to negate the *prima facie* judgments directly in case some readers might adopt these hasty judgments. They would be polite with this indirect refusal. They might want to present the proper judgments or put them upon first-sight judgments without suggesting how hasty some readers might be.

5. Operator-Sharing

Epistemic possibility shares some operators with other types of modality. As already exemplified, the operator *may* is used for epistemic possibility. This operator is also used for existential possibility, which stems from the available data and refers to the vague quantifier 'some' or the vague frequency marker 'sometimes'.

24. Linguistically, the data show that the definite and indefinite controlling ideas **may** be hedged using verbal and adverbial expressions or are unhedged.
25. The findings of this study show that students with very good English competence **may** not write academic essays in English according to the convention of academic writing.

Existential possibility is made explicit by "the data show" followed by examples of hedged and unhedged controlling ideas in (24), and "The findings of this study show" with no explicit occurrence of unsatisfactory essays by students with very good competence in English in (25). A paraphrase may read "Some definite and

indefinite controlling ideas are hedged using verbal and adverbial expressions or are unhedged" for (24). It may also read "Students with very good competence sometimes do not write academic essays in English according to the convention of academic writing" for (25). A variety of existential possibility is tentative existential possibility operated by *might* in two sub-varieties.

26. In his attempt to grasp the meaning of an unfamiliar word, he **might** misuse the correct strategy or use the wrong strategy.
27. They **might** have mispronounced or misspelled the problematic words.

The domain or the evidential for (26) and (27) is the available data in text reading that include "using a dictionary" and "took ′pat′ as ′pet", mistranslation of "pet" by "*memelihara"*, *"false cognates"* and use of mistaken background or general knowledge in "Brooklyn" for *"nama orang"*. The event is given in the past marked by *have*. A domain-based paraphrase would read "He sometimes misuses the correct strategy or uses the wrong strategy" for (26), and "They sometimes mispronounced or misspelled the problematic words" for (27). There two temporal sub-varieties.

Another marker for existential possibility is the epistemic-sounding operator *possibility that* in the following example.

28. The proportion difference **might** also be related to the **possibility** that as children become more advanced linguistically they would converge more and more to the adult language use.

There are three operators, "might" and "the possibility that", and "would" in the comment on the finding of an overextension of "idiosyncratic meanings" (12.24% by an older subject and 22.63% by the younger). It is followed by an authoritative belief in "Griffiths (1986), for example, believes that "*... overextension... usually ceases as soon as the child's production repertoire includes what adults would deem to be a more appropriate word*." The first operator ("might") is epistemic when "related" is intended for a causal relation and the possible cause is the age difference. This co-occurrence of the proportion difference and the age difference is commented under the influence of the authoritative belief. This authoritative belief is lowered to epistemic possibility expressed by the second operator "the possibility that". The third operator ("would") is epistemic as dictated, and permitted, by the second operator; it also adds some tentativeness to the second operator.

In the following example, however, "the possibility that" conveys existential possibility.

29. Besides the **possibility** that a certain lexical item was not found in the dictionary, the reader **might** select the wrong entry, the wrong meaning, or even an example as the description of the problematic lexical item.

In (29) both "the possibility that" and "might" are used for existential possibility because an immediate example is given, i.e., the problematic word "invariant", which was not found in the dictionary at the time of data analysis and misunderstanding is exemplified throughout the analysis. This possibility may be explicitly commented, as found in (30) below.

30. The **possibility** that what had happened at a lower level **could** have some effect on what happened at a higher level, or vice versa, should not be denied.

It is expressed by "the possibility that' and "could" for a past time event and right away indicated by the immediate deontic warning in "should not be denied" (By the tense sequence rule, "could" is a past tense form). This is also supported by the relevant data, e.g., the mistranslation of "who" by *"siapa"*, "that" by *"itu"*, "a dash"

by "sehingga", and the absence of the translation of "under which" that result in sentence miscomprehension; that is to say that analyzing sentence comprehension inevitably analyzing lexical problems. This possibility is also expressed by *can* in the following examples.

31. Lexical items such as 'rationale', 'consequent', 'duplicate', 'complication', and 'introduction' **can** cause problem because they are false cognates with *rasional* (rational), *konsekuen* (being responsible), *duplikat* (spare as in spare key), *komplikasi* (said of an illness or a problem made worse because of another illness or problem), and *introduksi* (getting to know something or somebody), respectively.
32. Background knowledge **can** help a reader understand a text but this is **not always** the case. Holmes and Ramos (1995) demonstrated that even plentiful background knowledge about the content addressed in a text was not always a good thing, particularly when background knowledge contradicted textual information.

A few data are given to exemplify existential possibility in (31): 'rationale', 'consequent', 'duplicate', 'complication', and 'introduction' and the false cognates. A similar paraphrase with "some" or sometimes" apply to (31), as also illustrated previously for existential possibility, e.g., "Some false cognates cause problems" (What is intended is possibly that some false cognates are problems). In (32), conceptual or neutral possibility is imposed by "this is not always the case" that is grounded on the authoritative finding as explicitly introduced by "demonstrated" and "was not always a good thing".

The operator *can* may, however, be used for neutral possibility that predicates the possibility to the subject of the statement. It says "that something is possible without suggesting that this depends on anyone's ability" and "circumstantial in that the circumstances make it possible" (Palmer, 1988: 112-113). The following examples exercise *can* for neutral possibility.

33. Then the question why the two different analyses revealed different results **can** be explained in respect to the variance of the groups.
34. At the most, they employed only four kinds of strategies that **can** be regarded as metacognitive strategies, namely correcting dialogues, studying grammar, understanding dialogues (before memorizing them), and immersing oneself into an English-speaking community.
35. Whether the topic is concrete of which it is often more successful or abstract of which it is difficult to support **can** be understood from the formulation of the title.

Example (33) can be paraphrased by "It is possible for the different results to be explained by the variance of the groups". By means of voice neutrality, it can be paraphrased by "The variance of the groups can explain the different results". These two paraphrases suggest no one's ability. They suggest a circumstance in which the possibility is found, i.e., statistical operations. This example can be circumstantially paraphrased by "It is statistically possible for the different results to be explained by the variance of the groups". A similar strategy can be adopted to paraphrase the other examples. This strategy confirms the neutral possibility, as practiced above, and helps in specifying that possibility in its relevant conceptual domain. It is explainability in statistics for (33), classifiability in learning styles for (34), and understandability in academic writing (35). As already found in epistemic possibility, there is also tentativeness in neutral possibility to reveal some psychological distancing effect in neutral possibility.

36. Why the ANOVA yielded different results **could** be explained in part by the nature of the analysis (M, 114).

Example (36) can be paraphrased by "It is tentatively possible for the different results to be explained in part by the nature of the analysis" or "The nature of the analysis in part can tentatively explain the different results" to reveal tentativeness and its independence of one's ability. There is tentative explainability in statistics in (82). Neutral possibility is also found in the following examples: "can be illustrated in Figures 4.1a and 4.1b."; "can be classified", "can be compared with the same subject's written interpretation, which read as follows", "can be summarized as follows", "can be concluded that". It may involve sensation-related verbs, e.g., "can be seen in Table 4.13."; "can be seen that the subject did not translate 'pat', "can be seen in line 1", "can be observed from the following data", "we can observe that the subject had separated the adjective clause from the nouns it modifies", "can be read from her written work, which is as follows", "can be found in the Appendix". Neutral possibility runs into a merger with actuality, i.e., explanation given, categories mentioned, title formulation analyzed and exemplified, and sensation experienced. This actuality implies a little sense of practical ability or success.

Examples with *could be* may be classified into three. First, there are examples of neutral possibility that involve contingency (as exemplified in 82), e.g., "could only be obtained through a close examination of Appendix 3"; "could reasonably be appreciated"; "could be drawn clearly" and "it could be the case that" with no tense marker. They are different from "could be recorded from the very start for the observation started when he was 1;6" that mentions a past tense adverbial where *could* is not the tentative form of *can*; it is the past tense form of *can*. Second, other examples with *could be* seem to combine neutral possibility and epistemic possibility, e.g., "could be regarded as"; "could be perceived to be"; "could be viewed to contain"; "could be forwarded to account for"; "could be categorized long with"; "could be accountable by means of". They are different from the third group, e.g., "could be perceived that there is" and "could be witnessed" (with no tense adverbial) to indicate the existence of the relevant data with some implication of personal success. The passive operator *could be* may serve three purposes: neutral-tentative possibility, neutral-epistemic possibility (a case of indeterminacy), and existential possibility. In data commentaries, the first and second describe the third, i.e., they are concerned with appropriateness of the description of the data obtained in the existential possibility. They are not concerned with causality, which is mostly exercised in epistemic possibility with other operators. This interpretation is based on neutral possibility, particularly in the passive, which predicates "the possibility to the subject of the sentence" and where "*can*, never *may*", is used "without suggesting that this depends on anyone's ability" (Palmer, 1988: 112). Epistemic examples of *"might be explained", "it could be that" and "it might be that"* are, however, found to raise a theoretical problem about indeterminacy in the modality status of *could*, whether the tentative form of neutral *can* or epistemic *may*. Another theoretical question is whether *might* might possibly be neutral, and whether *can* might be epistemic and, therefore, dynamic-neutral possibility might be epistemic possibility.

There are few points to be discussed. A relevant point in epistemic possibility is that it seems to dominate data commentaries. This might be true in light of operator sharing where the operators that are prototypically epistemic (*may*, *might*, *could*) are borrowed for existential possibility, which can, otherwise, be expressed with no modality markers. Vague quantifiers and frequency operators, as also found, can replace existential possibility operators. Neutral possibility, which can be properly expressed by *can* is also operated by *could* to result in neutral-epistemic indeterminacy. Epistemic possibility harmony of two equivalent values may also confirm this dominance as this harmony may stem from some personal drive for the reinforcement in epistemic possibility. Epistemic possibility is, however, distinguished from existential possibility and neutral possibility.

Indeterminacy, operating through *can*, *could*, and *might* in the passive, serves the purpose of the possibly proper description of the relevant data. It involves neutral possibility, e.g., explainabability in statistical analysis, concludability and summarizability after some discussion through the operator "could". Neutral possibility suggests no one's ability and no obstacles in giving the explanation, and existential possibility is evidentialized through the presence of the explanation, the conclusion, and the summary. Neutral possibility though giving the explanation (that must have been through some revision and confirmation) may be paraphrased this way: "It is possible to give some explanation after a quantitative finding, conclusion and summary after some lengthy discussion". The data of *might be* and *it might be that* may shed this epistemic possibility upon the validity of the explanation or description expressed in *could be* and *can be*. There might be, therefore, a claim for some degree of epistemic possibility in the sense that minimally the writer does not know that the explanation is false because the source text must have been sufficiently reviewed and revised, properly examined to be the final draft, or in the sense that there might be further revision because the explanation may be less proper than expected. This epistemic status seems to have been too far as assigned to neutral explainability in statistics, where the explanation is a statistical operation: "can be explained in respect to the variance of the groups", and "could be explained in part by the nature of the analysis". This particular case of *could* exemplifies a very high skeptical attitude, whether considered or not by the writer. This might have been motivated by a strong search for variability in modality operators or a desire to be epistemic in data commentaries. Should the writer be found to clarify the position, this indeterminacy might remain, i.e., he might let the readers select one of the reasonable interpretation by themselves and indeterminacy might be a strategy. This strategy is possibly comparable to vagueness strategy in data presentation through vague quantifiers such as "most", "more", and "less", and "might" in existential possibility. An indeterminacy strategy allows reasonable interpretations and, because found in data description, it might be related to some personal commitment to a certain body of knowledge for data analysis, as suggested in this view in language acquisition, where neutral-epistemic indeterminacy is frequently found: "there is no one theory of language comprehensive enough … there are differing and sometimes contradicting theories". A vagueness strategy usually provides no exact quantifier and might be possibly be geared by some search for a common pattern in data analysis. Quite possibly, a vagueness strategy is related to the nature of the sources of those vagueness operators. They are qualitative research reports, which "rarely include tables with numbers" and where "any numerical information is supplementary to the textual "because the purpose is to make the data "understandable" (Neuman, 1997: 334-335). They both reflect position indecisiveness and might be influenced by experience in reading where indeterminacy and vagueness operators are usually found.

Another relevant point in epistemic possibility is subjectivity. Epistemic possibility may be referred to as neutral with respect to subjectivity because it is usually found in the impersonal style, i.e., thematizing research findings to behave as the source of the epistemic judgments instead of presenting the first person pronoun as the grammatical subject. It is, however, conceivably subjective in the sense that the writer is likely to be the source of the judgments. Non-auxiliary operators such as "argues" and "suspected" may represent the writer's assertive acts and the selection of "might" and "may" for the same proposition, possibly reflect the writer's psychological different degrees of detachment or motivation for variety in possibility operators, but not the power of the relevant evidential. Subjectivity may also be exercised in these units: "the writer of this study often finds", "the investigator recognizes", "the investigator argues", "this study argues", "the writer's intention", and very explicitly in "Since *rich interpretation approach* is adopted in the present study, his utterances were interpreted based on the

researcher's understanding". Furthermore, it might be possible to introduce "I/the investigator thinks that" to replace possibility operators. A peripheral reason may be the selection of certain verbs such as "espoused" and "states" for authoritative names in data commentaries to suggest credibility as well as responsibility. The explicit neutrality (or impersonal style) in epistemic possibility might, therefore, serve as a device to obscure subjectivity in the sense of the writer's certain amount of knowledge.

Causality is also a relevant point for discussion in relation to a certainty degree. It is generally expressed in epistemic possibility when it refers to a preceding and concurrent enabling factor. Rivière (1981: 187) argues that an inference is "stronger" when "the inferred event takes place in the past or the present" than the one when "the inferred event takes place in the future". This claim might be based on some limited observation excluding academic or scientific writing or guided by an assumption of the psychological closeness of the present past events to the person who makes the judgment. The finding disconfirms his claim. The assignment of epistemic possibility to causality is found in scientific writing where skepticism is highly appreciated and epistemic possibility serves an excellent device for expressing skepticism. Epistemic possibility is concerned with optionality; it is found with one option as well as a number of options.

Epistemic possibility is assumed to be reflection of politeness. Harjanto (1999: 212) holds this assumption and relates epistemic modality to experiences in writing. It develops from the assumption that science is "built on *pragma* and on *docere* (instructing, informing) but also on *delectare* (entertaining) and *movere* (moving, enchanting)" (Markkanen and Schroder, 2000: 6). The interactional pathos-oriented interpretation is convincingly demonstrated by the co-existence of epistemic modality operators and deontic requests in Carretero (2000) and Fraser (1975). This interpretation may be applicable here to the co-existence of two separate epistemic modality operators and the co-existence of modalization and unmodalization. When a deontic request is absent, that interpretation may remain as an interpretation, as argued by Salager-Meyer (1997: 108) that "it is difficult to be sure … nor need we assume that the authors of hedged utterances always know why they hedge their statements".

Summary

Throughout the analysis, two patterns of evidentiality and epistemic possibility are found in causal relations, first, direct-direct relation, and second indirect-direct relation. The direct-direct relation applies to two sub-relations: between personally observable phenomenon and personally unobservable phenomenon. The indirect-direct relation also applies to two sub-relations: between an authoritatively assumed (unobservable) phenomenon and a personally observable phenomenon, and second, between an authoritatively observable phenomenon and a personally observable phenomenon. These four sub-relations are thus: first, directly observable-and-directly observable; second, directly unobservable-and-directly observable; third, indirectly unobservable-and-directly observable; and four, indirectly observable-and-directly observable. A directly observable phenomenon results from data analyses and is reported in a categorical statement or in existential possibility. A directly unobservable phenomenon results from some search for a compatible phenomenon outside data analyses. An indirectly observable phenomenon is found in an authoritative research report. An indirectly unobservable phenomenon is an authoritative assumption or opinion. These patterns suggest that a causal reasoning always involve a directly observable phenomenon.

Epistemic possibility operates with *may*, *might*, *could*, *possible*, *the possibility that*, *suggest*, and *seem*. There may be an operator interaction, e.g., the simultaneous presence of the two operators of the same possibility value *perhaps-might* that results in mutual strengthening. The presence of the two operators *may* and *might* for the same proposition of the two statements may suggest the interchangeability. Some of these operators also belong to other types of possibility, i.e., *may*, *might*, *the possibility that* and *could* to existential possibility; and, *could* to neutral-tentative possibility. One of these operators, i.e., *seem*, inappropriately behaves as epistemic-but-false in non-causal data description; it is immediately denied. The presence and absence of a modality operator for the expression of the same intention, and the co-existence of two separate modality operators facilitates the interpretation of epistemic modality in terms of politeness.

Epistemic and neutral possibilities characterize skepticism, expressing the commitment to, and detachment from, the validity of the relevant propositions. Some space may be found between them, i.e., neutral-epistemic indeterminacy, which seems particularly useful for the description of the data. With a sense of some presumed relevance, epistemic possibility turns to be very easily obtainable for falsifiable or confirmable causal relations.

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