



# Epistemic modality in English-medium medical research articles: A systemic functional perspective<sup>☆</sup>



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## ABSTRACT

Epistemic modality is a critical yet intricate linguistic device in academic writing. In this study, we investigated the use of epistemic modality in 25 English-medium medical research articles (RAs) from a systemic functional perspective. We focused on the distribution of the value and the orientation of epistemic modality and their functions in medical RAs. The results showed that medical RA writers mostly rely on low and median values, and implicitly subjective, implicitly objective and explicitly objective orientations of epistemic modality. These findings indicate that medical RA writers tend to make claims mainly in a tentative, reserved and objective way. The findings of the study may help non-native medical RA writers to produce more acceptable medical RAs.

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## 1. Introduction

This study investigates the use of epistemic modality in English-medium medical research articles (RAs) from a systemic functional perspective, an approach systematically relating language structures to language functions and to the meaning potentially available to addressers and addressees of a language. Systemic Functional Grammar offers a unique lens through which the medical RA writer's stance of certainty or uncertainty and subjectivity or objectivity in their modalized statements can be analyzed from the perspective of the "value" and the "orientation" of epistemic modality.

Epistemic modality has been defined in many ways. According to Lyons (1977), "epistemic modality is concerned with matters of knowledge, belief, or opinion rather than fact" (p. 793). Coates (1983) contends that epistemic modality "is concerned with the speaker's assumptions or assessment of possibilities and, in most cases, it indicates the speaker's confidence (or lack of confidence) in the truth of the proposition expressed" (p. 18). Palmer (2001) regards epistemic modality as a subtype of "propositional modality" and suggests that "with epistemic modality speakers express their judgments about the factual status of the proposition" (p. 8). Halliday (2004) explains that epistemic modality refers to the likelihood of a proposition. No matter how epistemic modality is defined, it is widely accepted that epistemic modality indicates the addresser's judgment of the truth of the statement or proposition and his/her attitude toward the addressees.

Long regarded as being critical to academic or scientific discourse, epistemic modality is used to hedge or boost propositions (Chen, 2010; Hu & Cao, 2011; Hyland, 1994, 1995, 1996a, 1996b, 1998; Mirzapour & Mahand, 2012; Wharton, 2012; Vázquez & Giner, 2008, 2009). The functions of epistemic modality are two-fold. One function is propositional or semantic; the use of epistemic modality indicates the degree of certainty of the proposition and the addresser's confidence in the truth of the

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proposition. The other is interpersonal or pragmatic; by adopting some politeness strategy through the use of epistemic modality, addressers can establish a relationship with their addressees and successfully communicate with them.

Most studies of epistemic modality focus on two aspects: its frequency and its functions. Studies have shown that in written academic discourse, epistemic modality is especially frequent in sections analyzing phenomena or setting backgrounds. Specifically, in research articles, both the Discussion and the Introduction sections show a higher frequency of epistemic modality than the Methods and the Results sections do (Hyland, 1994, 1995, 1996a; Skelton, 1988; Vihla, 1999). In Salager-Meyer's (1992) study, epistemic modality in medical research article abstracts was found to be "particularly frequent in the recommendation, the conclusion and the data synthesis moves" (p. 101). The frequency of epistemic modality has also been studied from a cross-disciplinary perspective. For instance, Piqué-Angordans, Posteguillo, and Andreu-Besó (2001, 2002) found that RAs in health science, medicine and biology mostly used epistemic modality, whereas literary criticism mainly tended toward a combination of deontic modality (indicating permission or obligation) and epistemic modality (indicating possibility or certainty). Vázquez and Giner (2008) compared the use of epistemic modality in marketing, biology and mechanical engineering and found that the use of modality markers depended on the nature of the data used for the research discipline: the 'soft' science (marketing) resorted more to epistemic modality than the 'hard' science (mechanical engineering), and biology, as a "mixed discipline" (p. 184), lay in between the two.

Although epistemic modality has been widely investigated, few corpus-based studies of the concept have been reported from the perspective of Halliday's Systemic Functional Grammar (SFG), which is the approach adopted in this study. SFG provides a new approach to analyzing the use of epistemic modality. In SFG, epistemic modal expression is considered to have two variables, "value" and "orientation" (Halliday, 2004, p. 150). The value of epistemic modality, implying the writer's commitment to the modalized statement, indicates different degrees of certainty at three levels, and shows a clear differentiation between certainty and uncertainty. The orientation of epistemic modality conveys the writer's responsibility for the modal meaning through various linguistic forms and reveals the subjectivity or objectivity of a modal expression from the perspective of the source of modality. For example,

- a) He **must** have inspected the cottage. (high value)
- b) They **should** be back by now. (median value)
- c) He **may** be ill. (low value)
- d) **I'm sure** we should sell this place. (subjectivity)
- e) **It's likely** that they've heard by now. (objectivity)

Examples a), b) and c) are instances which indicate different degrees of the speaker's commitment, "the degree to which the speaker commits himself or herself to the validity of what s/he is saying" (Thompson, 1996:60). Examples d) and e) are instances which show the difference in "how far the speaker overtly accepts responsibility for the attitude being expressed" (Thompson, 1996:60). Example d) makes it clear that it is the speaker's subjective point of view and in example e), the speaker objectivizes the point of view by making it appear to be a quality of the event itself.

Modal commitment and responsibility can be difficult enough for native speakers to understand and master, (Cheng & Cheng, 2014), but for non-native speaking (NNS) academic writers preparing academic articles they pose a significant challenge due to multiplicity of meaning and complexity of functions. Studies have shown that in academic writing, NNS writers tend to employ fewer modal expressions and a relatively narrow range of linguistic devices, thus potentially leading to relatively inappropriate (usually more categorical) assertions (Chen, 2010; Gabrielatos & McEnery, 2005; Hyland & Milton, 1997).

English-medium RAs constitute the most important channel for the presentation of new knowledge in today's scientific arena and RA writing poses a big challenge for NNS academic writers. Medical RA texts are not only content-oriented and informative, but also aim to convince and influence their readers, which is where the appropriate use of epistemic modality can certainly make a difference. Our many years' teaching/working experiences with medical writers in a medical university in China have revealed that NNES medical writers often find the expression of commitment or detachment to their propositions extremely troublesome and the manipulation of certainty, subjectivity and politeness in medical writing particularly problematic. As the inappropriate use of epistemic modality in medical writing can negatively affect the image of the writer and the impact of the argument, which in turn could prevent or delay publication, NNES medical writers may benefit from the appropriate use of modality. Given our interest in the linguistic devices used in medical writing and in how authors of published medical RAs employ epistemic modality we conducted a small scale exploratory study based on a corpus of 25 medical research articles written by native speaker English medical writers. Taking a systemic functional perspective, we investigate the value and the orientation of epistemic modality in English-medium medical RAs and addresses the following two questions:

1. What are the frequency and distribution of various values and orientations of epistemic modality used in medical RAs?
2. What are the possible functions of the values and the orientations used in medical RAs?

On the basis of the findings of the study, we hope NNS medical RA writers will have a better awareness of the choice of epistemic modality in preparing medical RAs. With this awareness, NNS medical RA writers may be able to more strategically qualify their commitment to their propositions.

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