

Modal verbs in academic papers in the field of tourism

Verbos modales en artículos académicos del ámbito turístico

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Abstract

The present study examines modal verb meanings and variation in these verbs in a corpus of texts in the field of tourism. We use a compilation of article introductions and conclusions written in English and published in leading journals specialised in tourism studies. Modal verbs are important to evince the authors' stance concerning the propositional content (Biber, Johansson, Leech, Conrad & Finegan, 1999; Palmer, 2001). Our main areas of concern are variation in the appearance and use of modal verbs in the introduction and conclusion sections of scientific research articles in terms of their forms and meaning, and variation in the functions of modal verbs in these sections. Variation ratios will be evaluated using a log-likelihood test to determine differences in significance between occurrences in introductions and conclusions. Our conclusions will report, therefore, on the forms, meanings and functions of modal verbs in the sections analysed.

Key Words: Corpus linguistics, modal verbs, academic language, tourism, pragmatic function.

Resumen

Este estudio trata sobre el significado y la variación de los verbos modales en un corpus de textos sobre turismo. Para ello, utilizaremos una compilación de introducciones y conclusiones de artículos en inglés que se han publicado en revistas especializadas del área. Los verbos modales son importantes para evidenciar la postura de los autores con respecto al contenido proposicional (Biber, Johansson, Leech, Conrad & Finegan, 1999; Palmer, 2001). Nuestro interés se centra en (a) la detección de la variación de uso de los verbos modales en la introducción y en la conclusión de los artículos científicos de investigación en cuanto a sus formas y significado y b) la variación relativa a las funciones de los verbos modales en estas secciones. El estudio se ha llevado a cabo utilizando herramientas de corpus para el análisis de los textos. El grado de

significación de la variación se evaluará de acuerdo con una prueba de probabilidad logarítmica para determinar su importancia según si los significados modales específicos ocurren en las introducciones o en las conclusiones. Entre otros aspectos, nuestro estudio aporta información sobre las frecuencias de aparición de significados modales más recurrentes en cada sección, introducción y conclusión, y las funciones pragmáticas que cumplen estos verbos en cada sección.

Palabras Clave: Lingüística de corpus, verbos modales, lenguaje académico, turismo, función pragmática.

INTRODUCTION

The present study examines modal verb meanings and variation in these verbs in a corpus of texts in the field of tourism. We have used a compilation of article introductions and conclusions written in English and published in leading journals specialised in tourism. These sections have been selected as they constitute two specific moments in the production of the paper. The introduction seems to have the clear function of assisting readers to read the article through the presentation of intentions, objectives and tentative conclusions. The conclusion seeks to summarise the strengths of the paper with clear answers to the research questions presented in the introduction. This means that the viewpoints in the two sections must be different. The introduction, for instance, has a programmatic perspective with a focus on knowledge and expectations, and the conclusion may present more examples of authoritative voice after the analysis of the evidence than the introduction.

Modal verbs are useful devices to evince the authors' stance concerning the propositional content (Biber et al., 1999; Palmer, 2001; Collins, 2009); therefore, these verbs can report on perspectivisation in introductions and conclusions. In this context, we expect that probability modal verbs entailing tentativeness will occur more frequently in introductions and necessity modals should appear more frequently in conclusions. Research on the use of modal verbs in these two sections of the research article has been conducted using corpus tools for text retrieval and analysis. Variation ratios will be evaluated using a log-likelihood (LL) test to determine the significance of variation according to whether specific modal meanings appear in the introductions or the conclusions. Our main research questions are 'How does the use of modal verbs vary in the introduction and conclusion sections of scientific tourism research articles in terms of form and meaning?' and 'How does the use of modal verbs vary in the introduction and conclusion sections of scientific tourism research articles in terms of the functions they fulfil?'

Research has been conducted using corpus tools to obtain evidence from our sub-corpus of introductions and conclusions, as mentioned earlier. Direct visual inspection of the texts has also been vital to identify the meaning of the modal verbs in context. The fundamental role of the context in specifying the sense a particular modal verb entails has been mentioned in the literature (see Huschová, 2015; Alonso-Almeida,

2015a and the references therein). A modal verb may indicate an array of meanings, and therefore without these contextual cues, it would be unreasonable to expect an accurate categorisation of these verbal forms. In other words, a categorisation of modal verbs using an automatic tagger would return results that are not useful, as current speech parsers are not yet sufficiently sophisticated to be instructed to analyse natural language to return distinct semantic or pragmatic categories. The plasticity of modal verbs makes them unique; however, it also challenges our ability to identify the meanings they involve each time. In addition to these senses of modal verbs, there is another aspect that cannot be achieved through an automatic interrogation of a computerised corpora, and this is the function these verbs fulfil in the texts in which they appear.

Computational searches are extremely useful for two reasons. The first is that a manual search is time-consuming, and not error-free. Furthermore, computer tools offer these retrievals in the form of concordance lines with the addition of co-text for analysis. These concordances can be customised so that they only show cases in which a particular context word is selected as a prerequisite to obtain cases of interest for our research. The second reason is associated with the first one. Automatic searches return all cases for a specific query, which facilitates the calculation of statistics concerning the results retrieved. All the above justifies the use of a combined methodology to retrieve and confidently categorise modal verbs.

In the following section, we first present a review of the literature on modality. We also provide a brief description of central modal verbs as our analysis will focus on this set of modal forms, leaving the so-called quasi-modal verbs for future research (Collins, 2009). Subsequently, we describe the corpus compiled for the present research, the methodology we have used in our analysis, and our interpretation of the results obtained from the analysis of the corpus. The following sections include this analysis and the discussion of findings. The conclusions are presented in the last section.

1. Theoretical framework

According to Palmer (2001: 1), modality “is a category that is closely associated with tense and aspect” in the sense that they affect the clause in which these phenomena appear. A more specific definition given in the same source reads as follows: “Modality is concerned with the status of the proposition that describes the event” (Palmer, 2001: 1). This means that modality realised by modal particles has scope over the proposition, and this, in turn, represents the stance of the author regarding the contents of the proposition. However, the notion of modality is unevenly treated in the scientific literature on the subject. The following are some of the definitions of modality:

1. “In particular, modality enables the locutor to make important strategic choices over very subtle gradable scales for the conveyance of attitudinal aspects associated to one's degree of commitment to such issues as possibility, obligatoriness, ability and so on. Indeed, the concepts of 'necessity', 'possibility', 'probability' and 'impossibility' are at the core not only of linguistic studies but also of modal logic, and have been a topic of central interest and intense study since classical times [...] From a linguistic point of view, modality is a complex concept to categorise and qualify in its different forms. There are various ways in which a speaker may add an overlay of meaning to the neutral semantic value of the proposition. One of these is mood; indeed, as remarked by Palmer (1986: 21), "the distinction between mood and modality is [...] similar to that between tense and time", in so far as mood is a morphosyntactic category of verb forms, expressing the degree or kind of reality assigned to a sentence. Several moods are to be distinguished, the three basic types being indicative, imperative and subjunctive.” (Gotti & Dossena, 2001: 10)
2. “Modality is a linguistic category referring to the factual status of a state of affairs. The expression of a state of affairs is modalized if it is marked for being undetermined with respect to its factual status, i.e. is neither positively nor negatively factual.” (Narrog, 2005: 186)
3. “Modality is the linguistic phenomenon whereby grammar allows one to say things about, or on the basis of, situations which need not be real.” (Portner, 2009: 2)
4. “Modality is a cover term for devices which allow speakers to express varying degrees of commitment to, or belief in, a proposition.” (Saeed, 2016: 134)
5. “Modality is the semantic category associated with the basic human cognitive ability of thinking that things might be otherwise, that is thinking of alternatives: situations other than what is the case. Modality refers generally to the linguistic means that allow “one to say things *about* , or *on the basis of*, situations which need not be real” (Portner, 2009: 1, emphasis is ours). (Rocci, 2017: 3)
6. “Modality is the term used in linguistics to refer to the expression of a speaker's evaluation of an event in terms of such notions as probability, possibility, obligation, permission and necessity, among other more fine-grained attitudes towards the propositional content framed by the modal particle.” (Alonso-Almeida & Álvarez-Gil, 2020: 62-63)

The above definitions show that modality is, therefore, a phenomenon that can represent different realities. All approaches agree that modality serves to qualify the meaning of a linguistic event. One of the most interesting aspects is to learn what is

modulated. Palmer (2001) and Saeed (2016) discuss propositions while Portner (2009) and Rocci (2017) refer to situations, Alonso-Almeida and Álvarez-Gil (2020) call them events and, finally, Narrog (2005, 2012) prefers to use the term state of affairs. It is relevant, therefore, to highlight the technical meaning of the concepts proposition and state of affairs since the situation of the term is more evident.

Generally, we will suggest that the term proposition refers to the expression of truthfulness concerning the field of logical semantics while the term state of affairs alludes to a fact, which may be the result or the consequence of a human action. In this work, given that we focus on modality as realised by modal verbs, it seems appropriate to use the term proposition since it responds to the same philosophical nature of language.

After this clarification, and turning again to the definitions of modality presented above, we highlight in all of them the evaluative and qualifying use of the proposition that the modal particle accompanies to make it more precise. Thus, the speaker's perception according to that proposition is captured in the modal form used to express, for example, obligation or probability. This evaluative dimension of modality implies that its analysis can be framed within what are called perspective studies or, in English, stance, as noted by Alonso-Almeida (2015a: 2):

1. "Stance indeed refers to different phenomena in language, and so it is generally the umbrella term for notions, such as *epistemic stance* (Finegan 1989), commitment (Caffi 1999; Caffi 2007; Del Lungo Camiciotti 2008), mitigation (Martín-Martín 2008; Alonso-Almeida 2015e), reinforcement or strengthening (Brown 2011), intensification (González 2015), authority, involvement and hedging (Hyland 2005; Hyland 1998), assessment (Goodwin 2006), modality and evidentiality (Chafe 1986; Frank R. Palmer 1986; Fairclough 2004; Marín Arrese 2009; Carrió-Pastor 2012; Pic & Furmaniak 2012; Goodwin 2006), affect (Martin 2000; Martin & White 2005), and vagueness in language (Cutting 2007)."

The definition of modality by some authors, such as Saeed (2016), includes the notion of commitment of the speaker concerning the truthfulness of the given proposition, which may include gradation from likely probability to unlikely probability. In Gotti and Dossena's (2001) definition, there is the difference between modality and mood, the latter being of a morphosyntactic nature and reflecting aspects of the reality referred to in the proposition. An example would be the use of the imperative to express a command as opposed to the use of the subjunctive to indicate hypotheses regarding the possible realisation of the action described. In addition to the mode, other linguistic elements communicate modality as the modal verbs and some clitics, as highlighted by Palmer (1986). In short, modality can manifest itself both morphologically and with lexical mechanisms. The case of modal

verbs, as affirmed by Aikhenvald (2004), is considered halfway between the grammar and the lexicon.

The way in which modality can be categorised varies according to the schools of thought and the scholars who make these classifications. However, Lyons' (1977) semantic classification into epistemic and deontic modality seems to be one of the most accepted, and Palmer's classification (1986) endorses it. This bipartite classification is found in the work of Biber et al. (1999); however, the categories are called intrinsic mode and extrinsic mode, which they define as follows:

2. "Each modal can have two different types of meaning, which can be labeled intrinsic and extrinsic (also referred to as 'deontic' and 'epistemic' meanings). Intrinsic modality refers to actions and events that humans (or other agents) directly control: meanings relating to permission, obligation, and volition (or intention). Extrinsic modality refers to the logical status of events or states, usually relating to assessments of likelihood: possibility, necessity, or prediction." (Biber et al., 1999: 485)

Palmer (2001) proposes another classification that distinguishes between propositional modality and event modality. The former includes epistemic modality and evidentiality. According to Hoyer (1997: 42), epistemic modality is "concerned with matters of knowledge or belief on which basis speakers express their judgements about states of affairs, events or actions"

Evidentiality refers to the source or the mode of information to obtain the propositional content. It has been studied frequently in recent decades (see Chafe, 1986; Willett, 1988; Chafe & Nichols, 1991; Lazard, 2001; Plungian, 2001; Viechnicki, 2002; Boye & Harder, 2009; Mushin, 2013; de Haan, 2010; Alonso-Almeida, 2015b; Greco, 2018) and is analysed as a mechanism to indicate the speaker's point of view regarding the information provided. In this paper, evidentiality is subsumed as a subcategory of epistemic modality without any further consideration even though the literature on the topic suggests that a clear difference between these two categories should be established, as suggested by Cornillie and Delbecq (2009) and Alonso-Almeida (2015a).

Finally, event modality expresses an attitude towards the information provided and is divided into deontic modality and dynamic modality, which are related to meanings of obligation and ability respectively, among others. In the case of deontic modality, Hoyer (1997: 43) includes devices entailing "necessity of acts in terms of which the speaker gives permission or lays an obligation for the performance of actions at some time in the future". The category of dynamic modality is included as a part of Palmer's event modality, in which deontic modality is incorporated. Palmer (2001: 10) believes that "dynamic modality relates to ability or willingness". This is what we generally refer to as the skills, abilities and/or capacities one person or one object may have to

carry out one action, such as in ‘Peter the translator can render this into English’, where ‘can’ expresses that the necessary conditions are met so that the action may be done. Nuyts (2001) defines dynamic modality in terms of the participant’s capacity and need as well as the participant’s internal potential or necessity. His definition includes a wide range of modal meanings in which the speakers and their circumstances seem to be central in the realisation of the event.

In this study, a tripartite categorisation of modality following the taxonomy described here is used, and it includes epistemic, deontic and dynamic modality. These types of modality can be adverbs (‘probably’, ‘perhaps’), verbs (‘can’, ‘could’, ‘must’, ‘shall’, ‘would’) and matrices (‘It is probable that *P*’, where *P* is the proposition hedged) (see Hyland, 1998, 2004). Our focus here will be on modal verbs, specifically on the so-called central modals. In English, there are nine central modal verbs, as noted by Biber et al. (1999): ‘can’, ‘could’, ‘may’, ‘might’, ‘shall’, ‘should’, ‘will’, ‘would’ and ‘must’ (see Denison, 1993; Biber et al., 1999). Biber et al. (1999) establish a relationship between pairs of modals according to a grammatical value based on the expression of time: can and could, may and might, shall and should, will and would. However, despite this usage, the past tense forms of these verbs have different pragmatic functions. One is the mitigation of the propositional content as a courtesy strategy since it avoids imposing the speaker’s perspective.

Modals in English can be described according to morphological, syntactic and semantic criteria, as suggested by Denison (1993). In this context, the definition of modal verbs involves the following parameters: modal verbs do not have finite forms and therefore it is not possible to find expressions such as ‘*to may’ and ‘*to should’; time distinction may occur in these forms, as explained above, but these expressions in the past may have a contextual meaning and do not really represent past time; modal verbs do not present third person singular desinence of the present indicative, that is, the forms ‘*she shoulds’, ‘*he cans’, ‘*he shalls’ and ‘*she wills’ are not acceptable; many modal verbs have contracted forms in their negative form (‘can’t’, ‘won’t’, ‘mustn’t’), and some even show reduced phonological forms in the form of a clitic, such as ‘ll, ‘d, instead of ‘shall/will’ and ‘would’ respectively; these verbs have no imperative forms; modal verbs are followed by infinitives without to, for example, he should stay; modal verbs affect the entire propositional content of the clause in which they appear, for example, ‘could’ [he try]; from a dialectal perspective, more than one modal verb may be given together, as is the case with some variants from the north of England and Scotland, where we can find cases of double modal verbs, for example, “So I say – you won’t can read it lass” (example taken from Tagliamonte, 2013: 24); and as operators, modal verbs share a set of properties known by the NICE acronym, namely modals can be negated by the use of ‘n’t/not’, modals can perform subject-verb inversion, for example, ‘Would you please help me?’, modals support propositional content elision, that is, they have a coda function, as in A. ‘Can you

come with me?’ and B. ‘Of course I can’, and modals can be used in matters of emphatic polarity, for example, ‘Yes, you can!’

As we have already suggested in the introduction to this paper, context is essential in the disambiguation of modal meanings. Diniz (2010: 169) emphasises the importance of context in the identification of modal meanings in the following terms: “Research has shown that modal verbs can acquire a variety of meanings depending on the context in which they are encountered”. For this reason, consideration of the context in which modal verbs appear is always a requisite, and this is the case in the present research. This is due to the array of senses a modal verb may entail in speech as original lexical meanings of these forms are only extant in earlier periods of the language, as suggested by Alonso-Almeida and Álvarez-Gil (2019).

2. The corpus and the research methodology

This paper studies central modal verbs in English introductions and conclusions as part of a set of research articles found in leading journals with an ICDS (Secondary Composite Index Broadcasting) scheme score of at least nine points, that is, nine points and over in the visibility scale. This means that a journal awarded nine points in the ICDS scheme is bound to appear as indexed and/or abstracted in several international databases.¹ The relevance of this criterion to the selection of journal articles in our corpus is that it guarantees first, that the journal enjoys recognition of prestige, and second, that the journal circulates well in the scientific community. This visibility index takes into account the databases and journal impact indexes in which the journals are included to award a position within the ICDS ranking. Journals matching this criterion include the *Journal of Travel Research*, *Annals of Tourism Research*, *International Journal of Tourism Research* and *European Journal of Tourism Research*. Take, for instance, the case of the *Journal of Travel Research*. This periodical is included in such relevant databases and indexes as Scopus, Social Sciences Citation Index, Academic Search Premier, ABI/INFORM, Aerospace Database, Business Source Premier, CAB Abstracts, Civil Engineering Abstracts, Hospitality & Tourism Complete, Metadex, Business Source Elite, Communication Abstracts, Geobase and PsycInfo. It is suggested that material from journals with an ICDS ranking is already safe, as they maintain recognised standards of research and editing quality.

In this paper, the place of birth of authors is not considered in our selection of texts as even though they use a variety of English, there is a tendency to establish some differentiation between native and non-native speakers. Our view, however, is that neither a place of birth nor an English surname may be taken at face value and justify an English-L1 upbringing and education. Furthermore, most leading journals require the paper to be edited by a native speaker before publication, and these papers may result in a mixture of idiolects that we cannot safely distinguish identity. As highlighted by Tribble (2017: 34), a surname cannot really indicate whether English is

or is not the L1 of a speaker. He adds that what it “can identify, however, are shared features of lexis, grammar, and discourse convention, which clearly show that the texts are grounded in specialist academic written genres”. Moreover, expert command of the discipline seems to cancel out the native and non-native distinction as the findings in Römer (2009: 99) suggest:

“When we deal with advanced-level academic writing, we actually move beyond the native/non-native distinction and that, in this context, experience or expertise is a more important aspect to consider than nativeness”.

This is supported by Mauranen’s (2018) idea regarding one’s language, which should be identified less globally and more locally to the extent that the notion of idiolect seems to apply more accurately for the description of degrees of English expertise. For these reasons, therefore, we preferred to analyse language without taking an English background of the authors for granted and produce, in this context, biased interpretations of modal verbs based on the authors’ assumed place of birth.

Regarding the academic article, this is unquestionably a well-known genre (see Swales, 1990; Kanoksilapatham, 2005; Stoller & Robinson, 2013; Halliday & Matthiessen, 2014), and therefore it develops in a clear structure comprising informative stages (also usually referred to as sections) following the functional-systemic approach of Martin (1984) and Eggins (1994). Martin (1984: 25) states that a genre is “a staged, goal-oriented, purposeful activity in which speakers engage as members of our culture”. Research on the academic article has generally agreed on the IMRD organisation of contents in this genre, that is, an introduction-method-results-discussion structure. Obviously, there is variation according to domains of knowledge, as evinced by Graves, Moghaddasi and Hashim (2013).

Table 1 below indicates the functions of each of the IMRD stages in the scientific paper according to Samraj (2016), who also reminds us that the results and discussion sections can appear as a joint stage (Samraj, 2016). In general, this IMRD structure fits the texts in our corpus perfectly. We have added the ‘conclusion’ section, thus IMRD-C, as this stage is commonly found in the texts collected. A more thorough analysis of the research articles on tourism is required; however, this is beyond the scope of this paper. As we have added this C stage, it should be noted that in our texts, this section has both a summarising function and a recommending function.

Table 1. IMRD-C structure in scientific articles.

Stages	Function
Introduction (I)	Definition of work
	Justification of work
	Description of work
Method (M)	Description of data
	Description of procedure
Results (R)	Report of results
Discussion (D)	Comment on results
Conclusion (C)	Summary of contribution

The identification of the introduction and conclusion sections in the selected papers was very straightforward as they have been rigorously labelled with the section headings ‘introduction’ and ‘conclusion’. In the case of the latter, some variation has been found as this section can appear with the heading ‘discussion and conclusion’ even if the contents of the section labelled thus represent exactly the same contribution as those with the heading ‘conclusion’.

The introductions and conclusions from the articles included in these journals have been retrieved and converted into readable plain text for use with the *CasualConc* tools for text retrieval. The suite allows for the search of modal forms according to the string ‘can/ could/ may/ might/ shall/ should/ will/ would/ must’ according to each of the article sections considered here. The number of words in introductory material in the scientific articles is 20,904, and another set of 25,490 words corresponds to the concluding material of the scientific articles. To compare the results, data has been normalised to 10,000 cases.

The findings have been grouped according to the modal verbs found in each of the sections. In addition, modal verbs have been categorised according to the modal meanings registered in these texts. Their modal meanings have been identified following the description offered in the theoretical framework section for the categories of epistemic, deontic and dynamic modality. As mentioned earlier, context is fundamental to disambiguate modal meanings and the pragmatic function modal verbs fulfil in each of the sections. In this sense, von Stechow (2006, 22-23) argues that:

“modal expressions have in of themselves a rather skeletal meaning and it is only in combination with the background context that they take on a particular shade of meaning (such as epistemic or deontic)” even if they “are not entirely subject to the whims of context but impose their own preferences as to what kind of modal meaning they would like to express”.

Our analysis following these directions reports on the frequency of the occurrence of modals per section in a percentage, and figures are provided for the purpose of contrasting results in each section.

3. Results and discussion of findings

Figure 1 shows the modal verbs that have been identified in the introductions.

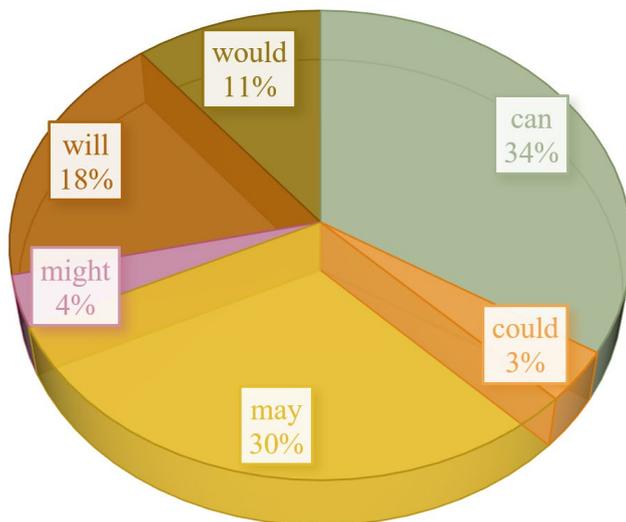


Figure 1. Modal verbs in introductions.

The modal verb that occurs most frequently in introduction sections is ‘can’, closely followed by ‘may’. Medium frequency is observed in the cases of ‘will’ and ‘would’ in this order. In the case of ‘might’ and ‘could’, the frequency is very low, and we found no instances of ‘shall’, ‘should’ and ‘must’. The last two are normally associated with deontic meanings. The modal verbs found in the conclusions are given in Figure 2.

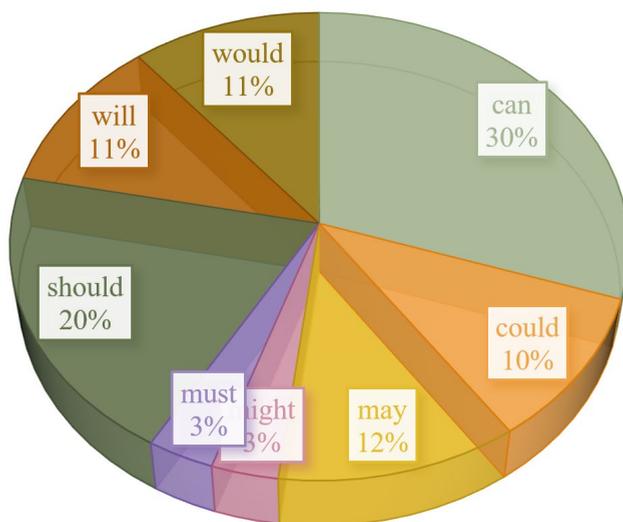


Figure 2. Modal verbs in conclusions.

The form ‘shall’ was not found in any of the article sections under inspection. Except for the case of ‘can’, which appears to be in the lead, the complete panorama changes for this article section. After ‘can’, ‘should’ is more common than any other modal verb. The forms ‘may’, ‘will’, ‘would’ and ‘could’ appear a similar number of times, with approximately for each one. Finally, the verbs ‘must’ and ‘might’ each constitute 3% of the cases. These results are given as normalised figures in Figure 3, which visually compares these results.

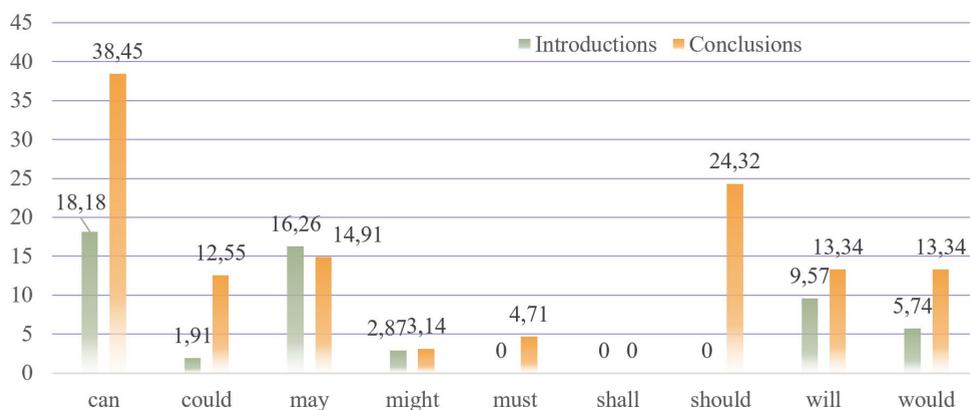


Figure 3. Modal verbs in introductions and conclusions (normalised figures).

Figure 3 allows the comparison of modal verbs and the differences pertaining to each of the sections under study. The forms ‘can’ and ‘should’ appear more frequently than any other form. From a broad perspective, these verbs are typically associated with the notion of possibility in the case of ‘can’ and the notion of obligation in the

case of 'should'. These meanings and the other meanings recorded in the corpus will now be described.

Alonso-Almeida and Carrió-Pastor (2017) present a comprehensive study of modal verb forms and their meanings in a corpus of linguistics research articles and another of engineering research articles. Regarding the occurrence of the forms, some differences and similarities arise. The form 'can' appears more frequently in the introduction in linguistics and engineering articles, with normalised frequencies of 40.72 and 36.33 respectively. This contrasts with the figure of 18.18 in the corpus of tourism texts. Interestingly, the closeness in the frequency of the use of 'can' in the conclusions is evident, with 38.45 and 40.42 in the corpus of tourism and engineering respectively, although the distance is larger in the case of the corpus of linguistics articles, scoring a total of 30.45. Regarding 'could', this form is less frequent in the introductions of linguistics texts with 0.93. In contrast, its frequency is 1.91 in the corpus of tourism and 2.20 in the corpus of engineering. In the case of conclusions, the form 'could' shows a normalised frequency of 12.55 in tourism research papers and 12.69 in linguistics research papers. The difference is in the corpus of engineering research papers, where there are no cases of 'could'.

The modal 'may' shows fewer cases in linguistics research paper introductions than in the other two corpora. In the conclusions, there is no matching between any two corpora, and this modal has normalised frequencies of 39.33 (linguistics), 14.91 (tourism) and 8.51 (engineering). The verb 'might' appears more frequently in engineering introductions and less frequently in tourism introductions. The real difference is in conclusions, with normalised frequencies of 3.14 (tourism) and 22.84 (linguistics). Alonso-Almeida and Carrió-Pastor (2017) did not identify cases of 'might' in engineering conclusions. The verb 'must' does not appear in the introductions of tourism texts, whereas it does in linguistics and engineering text introductions, with 0.90 and 3.30 respectively. This form is present in the conclusions of the texts in all the corpora compared and more frequent in linguistics and tourism research articles. The form 'shall' does not occur in any of the corpora and 'should' does not appear in the introductions of tourism papers. It occurs in the conclusions of tourism papers, however, and it occurs more frequently, with 24.32, than in the other two corpora, namely 14.89 (engineering) and 6.34 (linguistics).

Furthermore, there is a difference in the frequency of 'will' in the three corpora. This form appears more often in linguistics papers with 27.76, and scores 13.21 and 9.57 in engineering and tourism respectively. In conclusions, 'will' surprisingly appears more often in the corpus of tourism texts with 13.34 and less frequently in the corpus of engineering with 4.25 and the corpus of linguistics with 3.81. Finally, the frequency of 'would' is quite similar in the introductions of the texts in the three corpora, while this form occurs more frequently in the conclusions of the corpus of linguistics

research papers with 25.37. In the corpus of tourism and engineering, ‘would’ shows a normalised frequency of 17.02 in engineering and 13.34 in tourism. In short, this comparison reveals that there is certainly some disciplinary variation as far as form is concerned, and this may be an indication that the modal meaning exhibited in the introductions and conclusions of tourism research articles in our compilation may also exhibit some variation.

Figure 4 presents the modal meanings identified in the corpus according to the tripartite classification explained earlier.

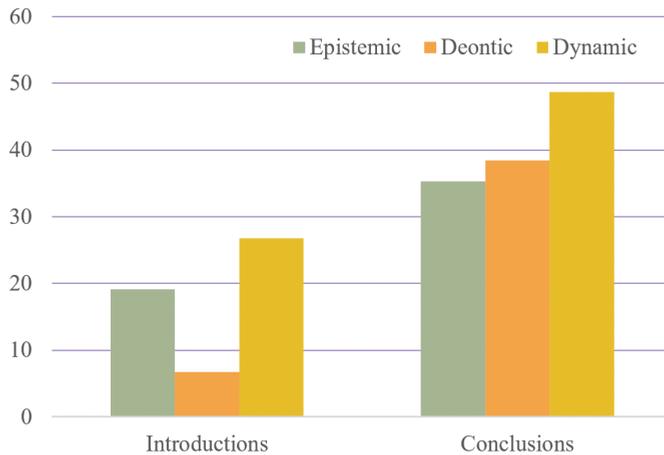


Figure 4. Modal verbs in introductions and conclusions (normalised figures).

As shown in Figure 4, dynamic modality is the most common modal device in the texts in both the introductions and the conclusions. In the case of the latter, the number of dynamic modals exceeds the number of other modal meanings in the conclusions and introductions. Epistemic modals appear in the second position, with more cases registered in conclusions. The use of deontic modality is very common in the conclusion sections, with only a few more cases than the epistemic devices. In the introductions, deontic modality is not a recurrent element. We shall comment on each modal type in the order of frequency. In this description, we use statistics based on the LL calculation of variation. The LL ratio works quite well for evaluating variation in small textual compilations, as in the case of our corpus of introductions and conclusions of research papers.

Comparison of our findings with those of Alonso-Almeida and Carrió-Pastor (2017) reveals that dynamic modality is the preferred modal meaning in the introductions of all the corpora examined, although there is not much difference between epistemic and dynamic meanings in the case of the corpus of engineering. Epistemic modality occurs more frequently in the introductions of engineering texts and less frequently in the corpus of tourism and linguistics respectively. Deontic

modality is used more frequently in the linguistics and engineering introductions in this order and used less frequently in tourism introductions. Regarding conclusions, the most common modal meaning is epistemic in the case of linguistics texts, although this modal meaning is the least frequent in the domain of tourism, and there is an obvious difference compared with the other two corpora. Dynamic is the second most frequent modal meaning and it is the most common in the corpus of tourism research articles. Deontic meaning is the third most frequent modal meaning, and this type also occurs more frequently in the corpus of tourism.

3.1. Dynamic modality

Dynamic modals used in the introductions of the texts are ‘can’, ‘may’, ‘will’ and ‘could’. In the conclusions, dynamic senses also appear in this same set of verbs, although with a very different frequency. The LL ratio reveals that the presence of dynamic modals is indeed very significant, as we shall show below. In both sections, the most frequent modal is ‘can’. Examples of this modal in context are given in (1) to (3) below, where ‘can’ indicates features that are specific and available to the person or the object being referred to:

- (1) Gaining CT is essential to business success because customers *can* be either promoters or detractors [Introduction].
- (2) The literature has highlighted the interest in using decompositions when the factors *can* be expressed additively (also a common example in indicators of tourist demand [Introduction].
- (3) Nevertheless, these state actions in turn are capable of generating new spaces for ethnic distinction which *can* act against this internal divergence of the state, or against the state itself [Conclusion].

The direct reference to the qualities referred to by the modal ‘can’ is to some extent strengthened by its use with the verb ‘be’. This collocation, namely ‘can be’, clearly reports on the potential of the customers in (1) and factors in (2) to represent the actions informed in the propositional contents of the sentences in which they appear, even if the nature of the actions portrayed is certainly different in the two cases. Example (3), however, presents a different lexical verb accompanying the modal form ‘can’. In this case, ‘can’ reflects the disposition of the new spaces for ethnic distinction to act against the divergence described in the statement where the modal verb appears. There are also some epistemic nuances in the use of ‘can’ in this instance as it also seems to convey some degree of likelihood that the proposition framed by ‘can’ will take place.

The same meaning of potentiality to carry out an event is found in the use of the modal verbs ‘may’, ‘will’ and ‘could’, as exemplified in excerpts (4) to (6) below. The sense of futurity in (4) is certainly unavoidable as the claim seems similar to a promise.

In this sense, ‘will’ appears to indicate that the necessary conditions will be met to have the action performed. In (5), the form ‘may’ indicates the logical outcome resulting from what has been said earlier in the text, and therefore ‘may’ signals enablement.

- (4) This research *will* also contribute to managerial practice in a number of ways, for example, to inform the design of content for specific devices and promote responsive websites for consumers [Introduction].
- (5) The above *may* explain the relatively high volume of research which has been devoted to the development of tourism demand models and the estimation of price elasticities of demand [Conclusion].

Variation in the use of dynamic modality in introductions and conclusions is presented in terms of an LL calculation in the following table.

Table 2. LL ratios of dynamic modal verbs.

	can	could	may	will
Dynamic	0.12+*	2.01+	5.66	2.82+

* + indicates overuse in the conclusions

Dynamic modality appears to occur more frequently in the conclusions of tourism research articles, as shown in Figure 4 above. The LL ratios in Table 2 indicate that the forms ‘can’, ‘could’ and ‘will’ are more likely to occur in conclusions. The modal ‘may’, however, appears more frequently in the introductions analysed. From a pragmatic perspective, the use of more dynamic modals in conclusions may have a strengthening effect in communication as this modal meaning indicates factuality, and this information may be presented as a conclusion in this way. There is, however, an intention to mitigate the illocutionary force of the propositional content by using this modal type (see Depraetere 2017, 16) as facts rely on potentialities and abilities, which may eventually not show. This is the case of ‘can’ in example (3) above. This modal verb presents factual information, avoids blatant imposition of perspective, and prevents potential face-threatening acts (Brown & Levinson, 1987).

3.2. Epistemic modality

Our notion of epistemic modality in this paper follows that of Nuyts (2001: 21), which is as follows: epistemic modality refers to the “evaluation of the chances that a certain hypothetical state of affairs under consideration (or some aspect of it) will occur, is occurring or has occurred in a possible world”. This sense of evaluation is also highlighted by Cornillie (2009: 47) as an epistemic modal device hedging a proposition, “epistemic modality evaluates the likelihood that this proposition is true”.

In our corpus, the modal forms matching Nuyts’ (2001) definition and, therefore, entailing epistemic meaning are ‘may’, ‘would’, ‘can’, ‘could’ and ‘will’ in this order of frequency in the introductions. This also means that all the epistemic modals detected

have the evaluative dimension specified in Cornillie’s characterisation of epistemic modality. The conclusions present the same forms to convey epistemic modality. The frequency of occurrence is, however, dissimilar to their occurrence in the two paper sections, and ‘would’ is the most form that occurs most frequently closely followed by ‘may’ and less closely by ‘could’, ‘can’, and ‘might’ respectively. Figure 5 visually presents the significant variation in the use of epistemic modals in introductions and conclusions, and this is also seen in the LL values presented in Table 3.

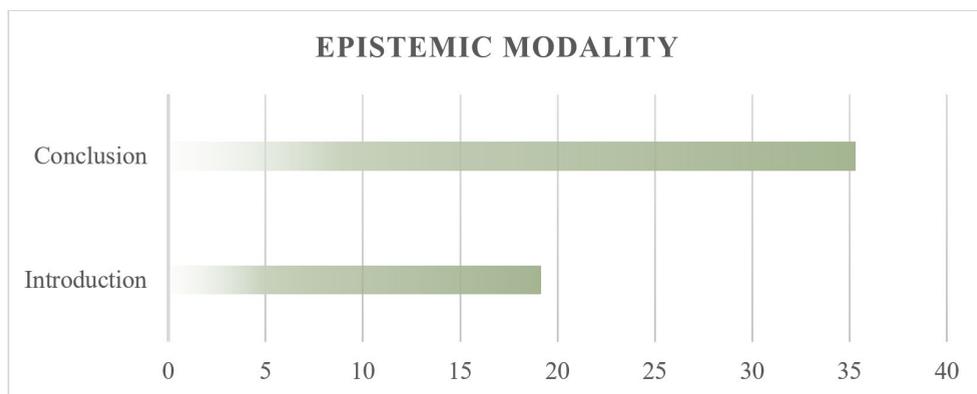


Figure 5. Epistemic modality verbs in introductions and conclusions (normalised figures).

Table 3. LL ratios of epistemic modal verbs.

	can	could	may	might	will	would
Epistemic	0.04*	2.68+	0.01+	0.37+	1.53+	1.72

* indicates overuse in the conclusions

The overuse of epistemic modality in conclusions, especially through the modals ‘could’, ‘will’ and ‘might’, can arguably be explained by the fact that the function of this section is to provide tentative interpretations of the phenomena analysed in the article. Obviously, there is a strong interest in the mitigation of the authors’ claims (Alonso-Almeida, 2015a; Carrió-Pastor (2016) and Flores (2020), probably following the tradition of writing within academia, as shown in the following examples that are typically realised with ‘may’, the contexts of which suggest that this interpretation is epistemic, especially in the case of (7).

- (6) Findings highlight the complexity of such analyses, suggesting that TRC as a special form of CBT *may* lead to the simultaneous empowerment and disempowerment of individuals in, agency, collectivity or self-awareness and on site-specific arrays of personal, socio-political, and environmental conversion factors.
- (7) First, the sample size representing 48.4 per cent of the hotels is considered small. Second, this research is cross-sectional in nature. Therefore, the results in this research *may* have limited generalisability.

In the last example, ‘*may*’ appears as part of an expositive text to contextualise inferential reasoning. All this is conveniently signalled by the discourse markers ‘first’, ‘second’ and ‘therefore’, the latter being the device that introduces the statement with ‘*may*’ entailing an epistemic necessity meaning (see van der Auwera & Plungian, 1998). This type of construction represents what Boye and Harder (2009) describe as evidential substance, namely a modal followed by the perfective or the progressive. This has been attested in the language of science, as reported in the works of Alonso-Almeida (2015b) and Alonso-Almeida and Carrió-Pastor (2017), among others. In his study on Swedish modals, Beijering (2017) describes this type of construction as representing logical reasoning in the light of the evidence at hand. The pragmatic function of this combination is convenient to signal mitigation of the propositional content, as well as the point of view of the writers and their involvement in the elaboration of meaning, as highlighted by Alonso-Almeida (2015a). In other words, this is a case of using a negative politeness strategy to avoid imposition on the recipients (Brown & Levinson, 1987; Kádár & Haugh, 2013).

In the introductions, this use of ‘*may*’ seems to have a predictive function in the sense that the authors assume a likely outcome considering the variable ‘*bias*’, which, they argue, *may* have significant effects on the interpretation of the results.

- (8) The *bias may* result in high occurrences of finding statistically significant results due to underestimated standard errors.

The function of ‘*may*’ in (8), as explained earlier, pursues an evaluative dimension in which the authors want to indicate how probable the fulfilment of *P* is. According to Collins (2009: 92), epistemic ‘*may*’ is used to imply the authors’ “lack of confidence in the truth of the proposition”, and this is certainly a case of hedging in Hyland’s (1998) terminology. In short, hedges allow writers to “present a proposition as an opinion rather than a fact” (Hyland, 1998: 5), and this is understood as a declaration of the lack of the authors’ commitment to the proposition (Coates, 2003).

3.3. Deontic modality

Deontic modality is the least frequent of the three modality types. In the texts, deontic modality is realised by the modal verbs ‘*will*’, ‘*can*’ and ‘*would*’, and this deontic modal appears in the introductions and the conclusions of our corpus. The LL values are listed in the table below.

Table 4. LL ratios of deontic modal verbs.

	can	could	may	must	should	will	would
Deontic	0.36+*	2.81+	1.88+	4.70+	29.13+	1.53+	0.05+

* indicates overuse in the conclusions

The form ‘*will*’ is definitely the most common in normalised frequency, even though deontic modality in introductions is certainly under-represented compared

with conclusions, as seen in Table 4. From the perspective of variation, ‘should’ is the most distinctive modal with an LL ratio of 29.13, with overuse in conclusions. Deontic modality is used in conclusions to indicate intention, and this is part of the programmatic function of the introduction of academic articles.

- (9) Fesenmaier, Xiang, Pan and Law (2011) have identified the five most frequently used information sources, search engines, OTAs, suppliers’ sites, review sites, and friends and family and these channels *will* be examined here. The over-arching research question is: Are there significant differences in the use of devices in information searching and in the hotel booking process? In particular, three sub-questions *will* be addressed in this study.
- (10) By examining the devices and information channels, this study *will* contribute not only to the literature but also to practice. The main contribution to the literature *will* be in examining the booking process and information channel behaviours for various device users.

According to evidence in earlier literature, the use of *will* in introductions indicates expectation, as shown in (11):

- (11) Similarly, the European online travel market *will* grow faster than the overall travel market, and this growth is fuelled by bookings made from smartphones and tablets (Walsh, 2013b).

Necessity is another value of deontic modals in conclusions. Charlow (2016) mentions the traditional division of modals according to necessity into weak and strong necessity modals. The form ‘should’ would be categorised as a weak necessity modal, and the modal form ‘must’ would correspond to the group of strong necessity modals. The author states, however, that a strong necessity modal does not exist, and she is “inclined to treat strong deontic necessity as a special case of weak deontic necessity” (Charlow, 2016: 47). The notion of ‘betterness’ seems to apply well to explain the modal sense of necessity. The following examples have been taken from our corpus:

- (12) Visiting Friends and Relatives (VFR) can be defined as a form of travel “involving a visit whereby either (or both) the purpose of the trip or the type of accommodation involves visiting friends and/or relatives” (Backer, 2003, 4) ... Thus, for a comprehensive understanding about the progress and development of a field that has had relatively little research undertaken, all the available sources of knowledge are important and *should* be analysed.
- (13) In addition, the top management can organise specific workshops and seminars for employees as a platform for discussing problems due to role conflict.

Second, as role ambiguity was found to be a common work stressor among Egyptian hotel employees, the top management *must* create a professional work environment with clear role expectations and specific responsibilities to ensure clarity.

In the example in (12) retrieved from an introduction, the authors show their stance regarding a methodological aspect of their research. Opposite to what happens with epistemic modality in which the authors seek to mitigate positioning, the use of ‘should’ in this particular case seeks a boosting effect to signify their commitment to their concluding remark, namely that all the available sources of knowledge require analysis. Jaime Pastor and Pérez-Guillot (2015) found that the modal ‘should,’ similar to the modal verb ‘must’, is quite common in technical English, as opposed to general English, to express obligation and necessity, and this meaning has been attested in our corpus. Example (13) precisely offers an instance of ‘must’ in the conclusion. The authors are reporting the need for the proposition described, namely ‘create a professional work environment [...]’, to be carried out to improve the situation described earlier in the text. In both cases, Charlow’s (2016) idea of ‘betterness’ justifies the deontic meanings entailed in the use of these two modal verbs. From a formal perspective, the scenarios in (14) and (15) can be represented as follows:

(14) *P is better than* $\neg P$ if P allows a more comprehensive understanding about the progress and development of the underresearched touristic field of Visiting Friends and Relatives (VFR), in the case of the example in (16).

P is better than $\neg P$ if P ensures clarity and avoids ambiguity, in the case of the example in (17).

This sense of ‘betterness’ can be safely applied to other deontic modals appearing in conclusions. While ‘should’ appears extensively to express some type of necessity and obligation, the forms ‘could’, ‘can’, ‘may’, ‘will’ and ‘would’ follow in this order in frequency. The most attested and patent deontic meaning here is that of advisability in the sense that conclusions are delivered in the form of recommendations that should be undertaken by the tourist industry (or related associations) or the local governments to improve the current situation and, therefore, be more economically relevant. The following examples illustrate this:

(15) The government *can* consider reducing the tax rate to casino operators as an incentive for hotels to inject more resources to EM, including decomposing food waste and other sustainable green practice.

(16) Largely, the findings suggest that wineries *must* continue to focus on the quality and variety of wines as the initial and continuing attraction for wine tourists.

(17) Hoteliers *should* also be taught and encouraged to set up a green audit system.

- (18) The tourism authorities *should* establish in advance feasible targets of growth and airline companies that can fulfil their targets *should* participate during the drafting of the tourism policy.

In all these cases, the modal verbs ‘can’, ‘must’ and ‘should’ report on the desirability of the actions described in the propositional contents of the statements in which these verbs appear. The idea of improvement, as in (14) above, remains strong in the use of these modal verbs in all these examples. These verbs indicate that it is essential for local tourism representatives of agents to take some actions to boost economic areas of tourist interest, which means that P done by A(ctors) ‘is better than’ \neg P by A. This is partially in line with the findings of Piqué-Angordans, Posteguillo and Andreu-Besó (2002), which suggest that the use of deontic modality in research articles represents a strategy by means of which authors want to involve readers in their own view of the facts. It seems clear, therefore, that the pragmatic motivation of deontic modals results from a desire to suggest authority as this notion is strongly connected with credibility in science.

CONCLUSION

This research aims to be a contribution to modality studies in the field of content-specific discourse and, therefore, has focused exclusively on material extracted from journals of tourism studies according to a particular criterion based on the quality and visibility of the research. We have been particularly interested in the use of modal verbs in introductions and conclusions. In this sense, even if this has not been our primary aim, we have detected disciplinary variation through the contrast between our findings and the findings of Alonso-Almeida and Carrió-Pastor (2017) in linguistics and engineering scientific papers. In addition, in line with our main objective, we have identified variation in the use of modal verbs in introductions and conclusions of tourism research articles.

The first finding of this study is that dynamic modality appears more frequently than any other type in the introductions and conclusions. Moreover, statistics reveal that the variation between these two sections is very significant in this respect, with overuse of dynamic modals in the conclusions. The function of these modals is to account for factual truth regarding the conditions of people and objects to fulfil an action, as well as the conditions for the action to occur. Dynamic modality, therefore, contributes to pragmatic strengthening in that the idea of authority is achieved by phenomena presented as factual truths rather than as suppositions.

Epistemic modality is second in terms of frequency. The variation in the use of epistemic modality in the sections studied is meaningful. It was found that epistemic modality is more common in the conclusions than in the introductions. The main pragmatic function of epistemic modality is to signal mitigation of the propositional

contents, and therefore the authors' commitment to the proposition is lower. In the specific case of conclusions, epistemic modals are deployed to hedge conclusions resulting from the interpretation of the analysed phenomena in the research articles. Epistemic modality is also used to indicate the logical analysis behind the authors' argumentation. In general, the pragmatics of this type of modality in both sections is the manifestation of a lack of commitment to the information presented with the aim of avoiding imposition.

Finally, deontic modals appear to match exactly the goals of the introduction, namely a programmatic function, and those of the conclusion sections, namely a recapitulation function. In the case of the former, deontic modals represent meanings concerning promises of action in the paper and the expression of expectation arising from the revision of earlier literature on the topic. In the latter, in most of the cases, deontic modality signifies advisability and necessity as these two meanings allow for recommendations resulting from the evaluation of findings and the contexts in which the tourist industry could perform better. Along with dynamic modality, the pragmatic function of deontic modality seems to be the indication of authority, and therefore this type of modality may have a persuasive effect on readers.

Future research will include the analysis of other rhetorical strategies in introductions and conclusions of research articles in the field of tourism. Our intention is to characterise the language and the pragmatics of linguistic devices in these sections as they constitute two fundamental parts of the scientific article. The introduction represents a statement of the authors' intentions, and therefore it is essential to be clear and concise and very persuasive to attract the interest of potential readers. The conclusion aims to show that the authors have achieved their initial objectives, and achievements are therefore presented observing certain rules of academic decorum.

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NOTE

¹ See <http://miar.ub.edu/about-icds> for further information on evaluation criteria for awarding an ICDS value.