Epistemic Modality in Academic Discourse in the Croatian and English Language

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Dissertation

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"*Upravo hipotetičnost i neizvjesnost tjeraju znanost naprijed, jer ako nema nesigurnosti i nagađanja nema ni potrebe za daljnjim istraživanjem." (Milas, 2005, p. 27)*

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Contents

Abbreviations, Symbols and Font Styles used in the Thesis

APA	American Psychological Association
Cro.	Croatian
Eng.	English
Crocor	Croatian corpus of research articles in psychology
Engcor	English corpus of research articles in psychology
EAP	English for Academic Purposes
ESP	English for Specific Purposes
IMRAD	Introduction- Method-Results –Discussion
LGSWE	the Longman Grammar of Spoken and Written English
LSWE	the Longman Spoken and Written English (Corpus)

RA	Research article
DI	Društvena istraživanja
PT	Psihologijske teme
SP	Suvremena psihologija
DP	Developmental Psychology
JPSP	Journal of Personality and Social Psychology
PID	Personality and Individual differences
cf.	confer (Latin for ‘compare’)
i.e.	id est (Latin for ‘that is’)
viz.	videlicet (Latin for ‘namely’)
vs.	versus (Latin for ‘contrasted’)
(…)	signals an omitted section of an example or quotation
Bold	highlighting in the text
Highlight	highlighted epistemic device in the example sentence
Underline	underlined expression in the example sentence highlighted for attention
Italic	example sentences extracted from corpora

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1. Introduction

The main focus of the present study is the examination of academic discourse which in broad terms refers to the use of language in academic context. Academic discourse is considered to be central to academic life, as it is through discourse that education is provided, scientific knowledge constructed and disseminated and scientific disciplines sustained and institutions established and maintained (Hyland, 2011). The present thesis is the outcome of cross-cultural research broadly aimed at exploring the distinctive ways in which Croatian and English writers of research articles in psychology use epistemic language to convey a personal stance towards their claims, those of other scholars or to refer to the claims generally held in the given disciplinary community.

The current study is broadly inspired by the contemporary research approach to academic language use which is based on the premise that academic discourse is a form of social interaction in which knowledge is constructed through a negotiating process between writers and readers, as members of particular scientific disciplines (Hyland, 2004). Such a conceptualization of academic discourse runs against the traditional accounts of an academic text as a predominantly neutral, faceless, impersonal report on scientific phenomena (Hyland, 2005a). The role of a writer of a contemporary academic text is no longer seen as accounting for the objective scientific truth reached by observation but as creating a rhetorically persuasive text in which what counts as scientific truth is constructed through plausible argumentation (Hyland, 1998; Hyland, 2004).

Linguistic research on academic writing is therefore particularly interested in deciphering how academics use language to build their arguments, express viewpoints, convey assessments with an appropriate level of certainty or doubt, etc. so as to create a text

the readers will find persuasive and eventually recognize as a valid contribution to the existing body of knowledge (Hyland, 1998).

Exploring how writers of research articles express their epistemic judgments or refer to those of other scholars shifts the linguistic analysis of an academic text to the domain of modality, in particular its epistemic sub-domain. Epistemic modality, as the main focus of the present research, is concerned with the assessments of possibility and likelihood that a certain state of affairs is true. In academic writing these features are mainly linked with the use of hedges, which encompass a range of lexical and non-lexical devices used to mark the writers' lack of commitment to the propositional content (Hyland, 1998).

As Hyland (1998) argues, scientific writing, among others, involves interpretative statements and these often come in mitigated forms. Hedges allow writers to offer perspectives to their claims, express a degree of caution in presenting new or unconfirmed statements, which may make them less refutable (Meyer, 1997; Hyland, 1998). Contemporary approaches to academic discourse postulate that attaining scientific knowledge involves reaching a consensus among discourse community members rather than a search for the ultimate scientific truth (Hyland, 1998). The awareness that the statements need readers' ratification means that writers need to make informed choices in how to construct their arguments with the ultimate aim of persuading the readers of their credibility (Hyland, 1998). Hedges allow writers to present the claims with caution and precision, playing thereby a critical role in gaining communal acceptance for the claims (Hyland, 1996a, 1996b).

Previous research has shown that the distribution of hedges across distinctive sections in research articles shows considerable variations in frequency, which generally reflects the specific rhetorical purposes of each section. Thus, hedges are particularly salient

in the argumentative parts of research articles, most notably in the Discussion but also in the Introduction sections, while their use is less frequent in the more descriptive Method and Results sections (Hyland, 1998; Vartalla, 2001).

The way writers use language in constructing their argumentation in academic writing is to a considerable extent disciplinary-specific. Previous research has shown that disciplines have their preferred writing conventions with respect to the level of personality writers attach to their claims, acknowledge the work of other scholars, explicitly involve the readers in the text, etc. (Hyland, 2005b). The use of hedges is particularly prone to disciplinary variations. Thus, in the more discursive soft sciences which generally deal with human subjects and less certain variables than those in the hard sciences, writers often need to express more caution and tentativeness in presenting their claims (Hyland, 2005b). By contrast, in the hard sciences such language is less prominent as the construction of knowledge is based on harder empirical data and more reliable quantitative research methodology (Hyland, 2005b). This means that academic writing can hardly be regarded as uniform and monolithic, but rather as embedded in the specific disciplinary rhetorical practices which reflect distinctive disciplinary knowledge domains (Hyland, 2004).

In addition to discipline variables, previous research has shown that academic writing may be susceptible to cultural variations, generally reflecting a wider socio-cultural background in which it is situated (Mauranen, 1993; Vassileva, 2001; Vold, 2006a; Hu & Cao, 2011). Research into intercultural rhetoric has indicated that the writing styles of distinctive cultures may differ in the level of authorial presence in the academic text (i.e. the use of personal pronouns vs. impersonal forms), citation practices, a tendency to use tentative or more assertive language in presenting knowledge claims, etc. (Vassileva, 2001; Fløttum, Dahl, & Kinn, 2006). Cross-cultural research on academic writing has been particularly interested in examining the rhetorical conventions of academic English in

relation to other languages which is understandable given the global status of English as the predominant language of scientific publication. As a way of illustration, in 2012, roughly 80% of all the journals indexed in Scopus were published in English (van Weijen, 2012).[1] A growing increase of English-medium publications has naturally occurred at the expense of other languages which have become less attractive as languages of scientific publication (Hamel, 2007). Consequently, non-native English scholars are turning more to English publications as the places where their research can become internationally visible (Hamel, 2007). The pressure to publish in English may place serious demands on non-Anglophone scholars to acquire language proficiency in academic English which presupposes not only advanced knowledge of vocabulary or grammar but also control of the rhetorical conventions in their disciplinary writing. These real-world needs have been among the primary motives for conducting linguistic studies on cross-cultural writing conventions. The research findings obtained through cross-cultural research may assist non-Anglophone scholars and students alike in becoming more aware of the preferred rhetorical choices in L1 academic writing as compared to English and thus increase their pragmatic competence when writing in academic English.

1.1 The present research

In light of the preceding discussion, the present research may be characterized as a cross-cultural, single-disciplinary, genre-based study aimed to illuminate how Croatian and

[1] van Weijen, Daphne. "The Language of (Future) Scientific Communication." *Research Trends*, www.researchtrends.com/issue-31-november-2012/the-language-of-future-scientific-communication. Accessed 25 November 2015.

English writers of research articles in psychology use epistemic modality markers in conveying their stance or in referring to that of other (un)named scholars.

The main motivation for selecting a research article as the object of the present study lies in its salient status as a key research genre in academic writing. For more than 100 years, the research article has been considered as the main vehicle for disseminating scientific knowledge and furthering scientific inquiry (Atkinson, 2013). At a personal level, publishing research articles is a means of securing scholarly academic positions, gaining promotion and generally academic credibility (Swales, 1990). Given the centrality of a research article in the academic community, it may come as no surprise that it has been the single most researched genre in academic discourse (Atkinson, 2013).

The decision to focus on hedges has been inspired by previous research which has shown that hedges are by far the most frequently employed stance markers in cross-disciplinary writing (Hyland & Tse, 2004; Hyland, 2005a, 2005b). Their saliency signals the importance writers give to the formulation of claims as well as the awareness that an appropriate degree of certainty attached to the claims may be critical in gaining acceptance for them (Hyland, 1998). Though lexical hedges may be realized by a range of different lexico-grammatical devices, the present study follows the previous research which has consistently shown that epistemic modality markers are the primary lexico-grammatical means of realizing hedging functions in research article writing (Hyland, 1998; Vartalla, 2001).

The present research focuses on the use of academic language in a single social science, namely psychology for at least two reasons. Being a social science and having human mental life and behavior as the foci of its study, psychology seems to be well-suited for exploring evaluative language use, of which hedging is but a part. The other reason is of

a personal nature. Having been teaching courses in English for Academic Purposes to undergraduate students in psychology, I was motivated to gain knowledge of the disciplinary discourse and thus become more competent in assisting my students in dealing with the subject-specific literature in English, most notably in reading research articles which is an obligatory segment of the syllabi in their target courses in psychology.

The empirical research on the Croatian academic discourse is generally severely limited so we still know little about language use in disciplinary writing. To the best of my knowledge, the pragmatics of epistemic modality has not been researched in the Croatian academic discourse. Aimed to fill this research gap, the present study can be regarded as a first attempt to provide a systematic account of the way a specific set of epistemic modality markers are used to mark stance in writing a disciplinary research article in Croatian.

In addition to advancing our knowledge on a single aspect of disciplinary writing in Croatian, the cross-linguistic perspective of the present study extends its relevance to the domain of inter-cultural rhetoric. In particular, it is expected that the findings of the current study may add to the existing body of knowledge on the cross-cultural academic writing conventions. The findings may be especially relevant for Croatian psychology scholars or students who may benefit from an insight into the culturally-specific patterns of evaluative language use, especially if they aim to make their research visible in the international context which is predominantly English-centered.

1.2 Research aims

Having outlined the major scope of the present study against the context of the contemporary research on the evaluative language use in academic writing, the research aims may be summed up as follows:

1. Which lexico-grammatical devices of epistemic modality do Croatian writers of research articles in psychology use to express the epistemic stance and how is the frequency of epistemic markers distributed in the distinctive sections of research articles?

2. What is/are the most salient lexico-grammatical category/categories of the epistemic devices in the Croatian sub-corpus?

3. Which hedging functions do epistemic markers perform in the Croatian research articles?

4. Which lexico-grammatical devices of epistemic modality do English writers of research articles in psychology use to express the epistemic stance and how is the frequency of epistemic markers distributed in the distinctive sections of research articles?

5. What is/are the most salient lexico-grammatical category/categories of the epistemic devices in the English sub-corpus?

6. Which hedging functions do epistemic markers perform in the English research articles?

7. What are the similarities and differences in the preferred choices, distributional patterns and hedging functions of epistemic markers in the English and Croatian sub-corpus respectively?

The theoretical framework of the present study draws on two major sources. The first relates to Nuyts' (2001) cognitive-pragmatic model of epistemic modality. The study adopts the definition of epistemic modality as proposed by this model and the dimensions of (inter)subjectivity of the epistemic evaluations, as these seem to be crucial in determining

the sources of epistemic judgments, i.e. academic voices examined in the disciplinary writing. With respect to the pragmatic functions of the epistemic modal devices, the study broadly follows Hyland's (1998) polypragmatic framework of hedges, which is considered to be one of the most elaborate models of hedging in academic writing.

The methodological framework of the present study is based on the model for contrastive rhetoric research outlined by Connor and Moreno (2005) and Moreno (2008). The model presupposes establishing different criteria for comparison or *tertia comparationis* for cross-linguistic analysis. Establishing the criteria for comparison is considered to be the central precondition in cross-cultural research on academic discourse as it ensures that cross-cultural comparison of academic writing is made on the comparable data (Connor & Moreno, 2005). With respect to the present study, *Tertia comparationis* were primarily established for the compilation of the corpus and for the design of the taxonomy of the epistemic markers used in the analysis.

The present corpus, titled CORACEN (Corpus of research articles in Croatian and English), was compiled by the author of the present thesis for the purposes of the comparable analysis. The corpus consists of two comparable sub-corpora, each consisting of 30 randomly selected original research articles extracted from three scientific journals in psychology in Croatian and English, respectively. The total size of CORACEN is 381 016 words.

The study combines corpus linguistic and qualitative methodology (Sanderson, 2008). The former involves the identification of the selected epistemic devices from the corpus by means of the linguistic software package Wordsmith Tools 6.0, in particular the Concordancer tool (Scott, 2012). The quantitative analysis involves comparison of the

normalized frequencies (n/1000) of the data. It aims to reveal the preferred choices of the epistemic markers characterizing the cross-cultural writing under study.

The qualitative approach deals with the contextualized analysis of the pragmatics of epistemic markers, particularly with the interpretation of their hedging functions across distinctive sections of a research article. In line with previous research (Hyland, 1998; Hyland, 2001), this part of the analysis was supplemented by the data obtained from semi-structured interviews conducted with psychologists affiliated to the Croatian and U.S. University Departments of Psychology. The involvement of the subject-specialist informants is crucial in researching disciplinary writing, as they can best account for the underlying motivation for the epistemic language use and the overall rhetorical practices of their respective disciplines (Hyland, 2004). When it comes to academic writing in psychology, adopting a cautious and tentative stance particularly in the interpretations of the research findings and drawing conclusions based on them primarily stems from the constraints inherent in researching elusive phenomena such as human mental processes.

By adopting multiple methodological approaches, the study attempts to provide a thicker analysis of the targeted linguistic category and its pragmatic functions in the selected cross-cultural research article writing. However, it is important to emphasize that the present analysis examines a single aspect of the cross-cultural academic writing and is based on a single academic genre in similar yet not completely identical sub-disciplines of a single social science. Given these and further constraints which are discussed in more detail in the Methodological framework, the present study does not claim to account for the general characteristics of the academic writing in psychology or academic discourse in general in the two languages examined (Sanderson, 2008). In that respect, the interpretation of the findings should be regarded as relating to the present corpus only.

1.3 Structure of the thesis

The present thesis is structured as follows. Chapter 1 provides a general scope of the thesis and outlines its major objectives. Chapter 2 deals with the theoretical framework and is divided into three sub-chapters. The first part focuses on a general account on epistemic modality as a linguistic category in both English and Croatian, followed by an outline of its major linguistic realizations. Epistemic modality is characterized in relation to other semantic domains of modality, particularly existential dynamic modality and in relation to evidentiality, as these seem to show most overlaps with epistemic modality. The second part of Chapter 2 deals with the role of epistemic modality in academic discourse as the primary focus of the present study. It starts with the account of general characteristics of academic discourse in both English and Croatian, and outlines the social constructionist approach, as the conceptual background of the contemporary approaches to academic discourse research. Particular attention is given to the concepts of a discourse community and a genre, most notably the rhetorical structure of the research article as the key genre in the present research. The third part of Chapter 2 focuses on the concept of evaluation in academic writing, a broad term involving a range of different devices writers use to express their viewpoints on the content of the propositions. The discussion focuses on the concepts of hedging and epistemic stance in academic writing, whose linguistic realizations are primarily associated with epistemic modality markers. In addition, attention is given to the cross-cultural research on academic discourse and some empirical findings on the use of hedges in cross-cultural disciplinary writing. Chapter 3 deals with a detailed outline of the methodological framework with a particular focus on the description of *Tertia comparationis* established for the present comparable analysis.

The analytical part of the thesis encompasses five chapters dealing with the quantitative and qualitative analysis of the lexico-grammatical categories of the epistemic

markers under study. Chapter 4 focuses on modal verbs, Chapter 5 on epistemic adverbs and adjectives, Chapter 6 on epistemic nouns, Chapter 7 on hedging functions of the epistemic modality markers in English and Croatian sub-corpora, Chapter 8 on epistemic verbs, and Chapter 9 on epistemic-evidential verbs. The analytical part of the thesis closes with Chapter 10 which deals with a general discussion on the obtained results. Chapter 11 outlines the conclusion of the present study and provides implications and recommendations for further research. The final part of the thesis comprises the appendices, references, and the list of the corpus articles.

2. Theoretical framework

2.1 Introduction

The purpose of the following chapter is to introduce the general framework against which epistemic modality as a linguistic category is approached in the present study. The discussion starts with the general characterization of modality, providing a broad overview of its major semantic domains in both English and Croatian, whereby the primary focus is placed on the characterization of epistemic modality and its defining properties. This is followed by the outline of its main linguistic exponents and the prevailing approaches to the relation between epistemic and non-epistemic modal meanings, as well as between epistemic modality and evidentiality as its closely related linguistic category. Specific attention is drawn to the dimensions of subjectivity and intersubjectivity of epistemic evaluations (Nuyts, 2001), as these have been proven to be important for the use of the epistemic modal devices in the present study. The chapter closes with an outline of the approach adopted here in line with the overall objectives of the study. It should be noted that the following discussion is meant to survey the theoretical background of the outlined dimensions, without a particular reference to academic discourse. The pragmatic roles of epistemic modal devices along with the dimensions outlined here are discussed in the remainder of the present study, most notably in the analysis of the corpus data.

Bearing in mind the overall scope of the thesis aimed to explore the pragmatics of epistemic modality markers as a function of a specific discourse type, the following section outlines the most salient aspects of epistemic modality considered to be pertinent to the purposes of the present study. Starting with the outline of the core semantic features of the epistemic modality domain, as well as its main linguistic realizations, the discussion moves on to the particular semantic dimensions related to epistemic modality, notably subjectivity

and intersubjectivity. As the subsequent discussion shows, these notions are particularly salient in accounting for the nature of epistemic evaluations in academic writing. The final part of the section is dedicated to the complex relation between epistemic modality and evidentiality, which seems to be an inseparable element in discussing epistemic qualifications.

2.1.1 General remarks on modality in English. Almost any theoretical or research-oriented account on linguistic modality would likely attest that modality is an elusive category hard to define, describe, and therefore study in any straightforward manner. This view seems to be well depicted by Narrog (2005, p. 165) who claims that "there is hardly any grammatical category which has been given more diverging definitions, and under the label of which a wider range of phenomena has been studied." According to Palmer (1986), one of the difficulties in defining and consequently studying modality concerns a lack of its core prototypical semantic features which results in subsuming different notions under its more or less extensive scope. Additionally, the scope of its linguistic manifestations is largely diversified, ranging from more grammaticalized markers (e.g. modal verbs) and various lexical markers (e.g. cognition verbs) to prosody, i.e. intonation which can also signal different modal meanings (Palmer, 1986). Of no less importance is the polysemous nature of the modal verbs expressing different modal meanings, as is the case with the English and Croatian modal verbs (Nuyts, 2001; Besters-Dilger, Drobnjaković, & Hansen, 2009). This may account for the fact that discussing modality usually entails discussing its distinct semantic domains which can hardly be studied without a reference to other modal domains (Nuyts, 2001).

Despite the difficulties in pinpointing a precise definition of modality, there seems to be a broad agreement on the fundamental features commonly subsumed under it. Thus, it is often presumed that modality primarily concerns a speaker's attitude towards propositions (Lyons, 1977; Palmer, 1986). For example, for Kalogjera (1982, p. 1) modality denotes "the attitude of the speaker towards the meaning expressed by the main verb in a clause." From a cognitive linguistic perspective, modality deals with potential reality and concerns "the speaker's assessment of, or attitude towards, the potentiality of a state of affairs" (Radden & Dirven, 2007, p. 234). However, a common view on subjectivity as the core notion of modality has been challenged, for instance by Narrog (2005) who argues that it is not the subjectivity but the factuality of the state of affairs (or rather its undetermined status) which lies at the heart of modality. A retreat from subjectivity as the core notion in defining modality is also evident in Palmer's claims (2001) that modality is concerned with the status of the proposition that describes an event, though a speaker's attitude surfaces in defining its subcategories.

Other defining concepts of modality concern possibility and necessity as its key semantic domains (van der Auwera & Plungian, 1998; Huddleston & Pullum, 2002). Possibility and necessity are also the focal elements of traditional modal logic used in the basic division of modality into two central types, namely epistemic and deontic (Lyons, 1977). However, the notions of possibility and necessity are only parts of the complex picture of modality as they cannot account for its gradient nature, reflecting different degrees of a speaker's commitment to the state of affairs (Palmer, 1986).

Instead of offering a precise definition of modality, some scholars (e.g. Salkie, 2009) opt for a more inclusive framework based on the prototypical elements. Such an approach is proposed by Huddleston and Pullum (2002, p. 173) who consider the speaker's attitude

"towards the factuality or actualisation of the situation" to be the focal point of modality, adding that possibility and necessity constitute its central concepts.

Even against this sketchy background, it can be seen that modality is indeed a rather complex category, which has given rise to distinctive understandings of its features, and consequently a plethora of different accounts, some of which are discussed in the subsequent sections.

Prior to the overview of the semantic classification of modality with a primary focus on the epistemic domain, a note should be made on the basic distinction between modality and mood as both are used to express modal meanings (such as possibility, wish, doubt, etc.), albeit in different ways. While modality can be marked by a range of formal devices such as modal auxiliaries, adverbs, particles, etc., mood is restricted to the grammaticalized modal meanings in verbal inflections (Huddleston & Pullum, 2002). In other words, unlike modality which is a semantic category encompassing a range of different semantic domains, mood is "a morphosyntactic category of the verb" (Palmer, 1986, p. 21), and is traditionally discussed in terms of its distinctive types, i.e. indicative (Realis), subjunctive (Irrealis), and imperative (Brdar, Kučanda, & Omazić, 2001).

2.1.2 General remarks on modality in Croatian. As far as the Croatian language is concerned, there have not been any extensive, separate accounts on modality in contemporary Croatian grammar books, at least not at the moment of writing up the present thesis. Instead, modality has been mentioned within discussions on distinctive mood categories, (Pranjković, 1995; Barić, Lončarić, Malić, Pavešić, Peti, Zečević, & Znika, 2005; Silić & Pranjković, 2005). Thus, within the mood system, which can be realized in four distinctive ways i.e. indicative, imperative, subjunctive and optative, the indicative

expresses an unbiased or objective speaker's attitude towards the content expressed by the predicate and is thus unmarked (Pranjković, 1995; Barić et al., 2005; Silić & Pranjković, 2005). On the other hand, the remaining types are marked in that they express a speaker's or writer's attitude towards the content of the predicate, such as a command or request (imperative), possibility (subjunctive) or a speaker's wish (optative) (Barić et al., 2005).

Silić and Pranjković (2005) distinguish between objective and subjective modality, both of which are discussed under the category of mood. According to the authors, objective modality or modality in a narrower sense denotes the relation towards reality in a sense of what is real, possible or unreal, while subjective modality most often denotes a speaker's relation towards a proposition which can relate to the notions such as wish, request, command, etc. In addition to tenses and mood, modality may also be expressed by a range of other devices expressing modal meanings, such as modal verbs, modal adverbs and adjectives, etc. (Pranjković, 1995).

Apart from its rather limited account in grammar books, modality in Croatian has received some attention in cross-linguistic studies (Kalogjera, 1982; Sesar, 1987; Letica, 2009). Thus, Kalogjera's (1982) contrastive analysis focuses on the similarities and differences in the use of modal auxiliaries in English and Serbo-Croatian with the ultimate aim of identifying the interference between the two languages, primarily for teaching purposes. Sesar's (1987) cross-linguistic account on modality in Croatian and Czech encompasses a broader range of modal devices in the two languages with a primary focus on their formal-syntactic characteristics. Driven by the prevailing accounts of modality in Czech, Sesar (1987) distinguishes between modality in a wider and a narrower sense. The former refers to a speaker's attitude towards reality and determines the types of sentences which may be affirmative, interrogative, optative, and exclamatory. Affirmative and negative sentences are discussed within modality of plausibility (Cro. *modalnost*

vjerodostojnosti) which denotes a speaker's assessment of the reality and consequently a varying degree of his or her commitment towards it. Modality in a narrower sense marks a speaker's relation towards the content of the proposition with respect to reality which can be real or unreal. The latter includes the categories such as possibility, volition, permission, and necessity and can be realized by linguistic means such as modal verbs, modal particles, etc. As already noted, though Sesar's (1987) account is primarily focused on the formal syntactic criteria and is not directly related to the scope of this thesis, some of its aspects are referred to in the subsequent sections of the present study.

Given that epistemic modality has not been systematically treated in the Croatian literature, the framework adopted here mainly draws on its accounts in the English linguistic literature. As noted, modality is a heterogeneous category encompassing different meanings which makes it hard to define and describe in single terms (Palmer, 1986). The following section provides even more evidence to the complexity of modality, in particular with respect to its distinctive semantic domains.

2.1.3 Semantic domains of modality. Traditionally, modality has been prevalently viewed as a semantic category. As Narrog (2005) points out, unlike syntax or morphology which differ cross-linguistically, semantic characteristics of modality offer a framework within which modality can be studied at a more universal level. According to Narrog (2005), this means that languages will differ in the way modal categories are linguistically realized but some basic modal meanings are common cross-linguistically. Semantically speaking, modality is a heterogeneous category which, ignoring the labeling for a moment, encompasses at least three basic meanings: epistemic, deontic, and dynamic, considered to

be the core semantic domains of modality (Nuyts, 2001; Besters-Dilger et al., 2009). Though discussed further below, each type of modality in both English and Croatian is exemplified here by the basic example sentences containing modal auxiliaries, while the glosses illuminating their respective meanings are given in the brackets:2

EPISTEMIC MODALITY

1. *It might rain again. (=It is possible that it will rain.)*

1.' *Mogla bi opet pasti kiša. (=Moguće je da opet pada kiša.)*

DEONTIC MODALITY

2. *He may go out now. (=He is allowed to go out now.)*

2.' *On smije ići van. (=Dopušteno mu je izaći van.)*

DYNAMIC MODALITY

3. *She can run very fast. (=She is able to run very fast.)*

3.' *Ona može brzo trčati. (=Ona je u stanju brzo trčati.)*

As can be seen, in sentences (1) and (1') a speaker expresses his or her judgment on the possibility that it might rain, the meaning of (2) and (2') denotes the permission granted to someone to go out, while the meaning of (3) and (3') refers to a subject's inherent ability to perform a certain act.

This basic understanding of the semantics of modality in linguistic terms can be traced back to the traditional modal logic, particularly von Wright's (as cited in Palmer, 1986, p. 11) classification of four modalities or modes of truth which refer to the alethic modes (modes of truth), the epistemic modes (modes of knowing), the deontic modes (modes of obligation), and the existential modes (modes of existence). This distinction has

[2] The given examples illustrate only the prototypical meanings of each modality domain.

turned out to be the most significant reference point on which the contemporary linguistic classifications of modality are based, such as Palmer's typology (1986) which has given input to most major accounts on the modality types. According to Palmer (1986), the central modes for linguistic understanding of modality refer to epistemic and deontic, whereby epistemic modality encompasses both alethic and existential.[3] Palmer's (1986) observations on modality types follow Lyons' (1977) ideas on epistemic and deontic domains of modality whereby epistemic modality deals with matters of knowledge and belief, while deontic with "the necessity or possibility of acts performed by morally responsible agents" (p. 823).

In her influential corpus analysis of English modal verbs, Coates (1983) distinguishes between epistemic and root modality. The author abandons the term *deontic* derived from modal logic, arguing that the term refers to the logic of obligation and permission only, while the typical non-epistemic or root modals (e.g. *must*) include a range of meanings, of which obligation and permission are the central ones. The term *root* modality can often be found in the Anglo-American literature on modality (Nuyts, 2001; Brdar et al., 2001; Radden & Dirven, 2007) but also in the Croatian (Kalogjera, 1982), and it covers dynamic and deontic readings of modal auxiliaries. As Radden and Dirven (2007) suggest, the label *root* is indicative as it implies that root meanings show primacy over epistemic ones, an issue that is briefly touched upon on the polysemous accounts of modality further below.

An important contribution to the contemporary cross-linguistic accounts on modality, in particular its epistemic domain, is offered by Nuyts (2001) whose framework is largely

[3] According to Palmer (1986), alethic modality is excluded due to its non-distinctiveness to epistemic modality since what is logically true is equivalent to what the speaker believes to be true. With respect to existential modes in *Mood and Modality* (1986), Palmer maintains that existential modes can also be subsumed under the term epistemic modality. Thus, the example *Lions can be dangerous* can be glossed as *'Some lions are dangerous'* but also as '*It may be that some lions are dangerous',* indicating the epistemic reading of the modal (Palmer, 1986, pp. 11-12). However, in Palmer (1990) this distinction is altered, whereby existential modality is treated separately from epistemic modality.

adopted in this study. In his cognitive-pragmatic framework of epistemic modality, Nuyts (2001) distinguishes between epistemic, deontic, and dynamic modality. Epistemic modality involves a speaker's evaluation of the likelihood of a certain state of affairs. By contrast, deontic modality refers to an "evaluation of the moral acceptability, desirability or necessity of a state of affairs…", while dynamic modality denotes "an ascription of a capacity or a need to the subject-participant in the state of affairs, or of a situation-internal potential or necessity for him/her/it to do something…" (p. 25).[4] Nuyts (2001) opposes subsuming deontic and dynamic modality within the same domain, i.e. root modality primarily because such an approach runs the risk of ignoring their obviously different semantics. One of his arguments in that respect lies in the notion of a speaker vs. agent orientation. Thus, dynamic modality is completely agent-oriented, deontic is both agent- and speaker-oriented,[5] while epistemic is completely speaker-oriented.

Based on the above illustrated typologies, it may be observed that despite different terminological and classificational proposals, a broad semantic domain of modality can be divided into two or rather three basic subfields (Nuyts, 2006; Zvekić-Dušanović, 2011). In addition, while the core status of epistemic modality (along with its label) has remained rather intact, the (non)-epistemic side has been subjected to different divisions, reflecting thus various understandings of this semantically rather heterogeneous field of modal concepts (de Haan, 2006).

[4] In addition to the above stated, there are also alternative, more extensive accounts of modality which distinguish between several semantic domains (e.g. Bybee, Perkins, & Pagliuca, 1994; van der Auwera & Plungian, 1998).

[5] For example, issuing permission involves both an agent at whom the permission is directed, but at the same time a speaker who issues the permission (Nuyts, 2001).

Prior to the outline of the most fundamental features of distinctive modal domains in both English and Croatian, with a particular focus on epistemic modality, attention should be drawn to the basic components of a modal structure (Depraetere & Reed, 2006). These comprise the modal indicator and the proposition (Zvekić-Dušanović, 2011). In traditional terms, the former is labeled as modus while the second as dictum (Piper, Antonić, Ružić, Tanasović, Popović, & Tošović, 2005). According to Zvekić-Dušanović (2011), the modal indicator is a formal sign of modality, while the proposition is the semantic content which is qualified, i.e. a subject of the qualification. Thus, in the sentences:

4. *I think/ It is possible/ John thinks that he is telling the truth.*

the modal indicator refers to the underlined parts of the sentences, while the proposition is signaled by *that*-clauses. As can be seen in the examples above, the modal indicator identifies an assessor or a holder of a modal qualification. This may be a speaker, who is explicitly (*I think*) or implicitly (*It is possible*) present in the modal structure, or someone else whose modal qualification is being reported (*John thinks*) (Zvekić-Dušanović, 2011). The question of a holder of an epistemic qualification, however, is discussed in more detail in Section 2.1.3.3.5. In line with the overall purpose of the current study, the following section is meant to present only the basic meanings encompassed by the respective semantic domains of modality, focusing on the modal verbs.

2.1.3.1 Deontic modality. The scope of deontic modality (from the Greek 'deon'- "what is binding")[6] is related to "social interaction" (Radden & Dirven, 2007, p. 236). It refers to speaker's issuing obligation, giving (or refusing) permission, making promises or threats which derive from external factors, i.e. another speaker or some societal authority,

[6] Lyons (1977, p. 823)

such as law (Palmer, 1990; Palmer, 2001). Palmer (2001) argues that in terms of illocutionary acts, deontic modality is realized mostly by Directives, in particular by modals *may* and *must*, as in:

5. *You must/may come here*.

in which a speaker imposes obligation or gives permission, respectively. According to Nuyts (2001), deontic modality may be referred to as expressing moral desirability which can be of a scalar nature, i.e. ranging from absolute necessity (6) to different degrees of moral desirability or acceptability (7).

6. *You must give it back to me.*

7. *We should say thank you every time we feel it.*

As noted, deontic modality also includes notions such as threats or promises which the speaker guarantees to be accomplished (Palmer, 1990). These meanings are primarily associated with the use of *shall* as in:

8. *You shall take it out immediately.*

With respect to Croatian, deontic meanings can be realized by different modal verbs (Kalogjera, 1982).[7] Thus, obligation and necessity may be expressed by modals *morati*, *trebati*, *valjati*, whereby *valjati* and *trebati* signal a weaker obligation than *morati* (Hansen, 2005), as shown in examples (9) and (10), respectively:

9. *Moraš/trebaš predati seminarski rad.*

10. *Valja/Treba više raditi.*

[7] According to Kalogjera (1982), deontic meanings may be expressed by adverbial (e.g. *biti dozvoljeno*) and adjectival means (e.g. *biti dužan*).

Permission is signaled by the modal *moći* and the semi-modal *smjeti* (11),[8] as shown in:

11. *Smijete/možete ovdje parkirati.*

As deontic modality is not the focus of the present study, the preceding section was meant to introduce only a general overview of this domain of modality. By contrast, given that dynamic modality (or at least some of its aspects) shows more links with epistemic modality, more space is devoted to this modal domain.

2.1.3.2 Dynamic modality. The semantic core of dynamic modality denotes a subject's inherent ability (Palmer, 1990). According to Palmer (1990), unlike epistemic and deontic modality, dynamic modality lacks the notion of subjectivity, which makes its theoretical account rather unclear. One of the reasons for treating dynamic modality as a distinct type of modality is its ambiguity (Huddleston & Pullum, 2002), which can be illustrated by the polysemous nature of the modal verb *can.* Thus, if taken out of context, the sentence:

12. *She can speak French.*

can be glossed as either *She has the ability (to speak French)* or *She is granted the permission to speak French.* In other words, the modal *can* grants either a dynamic or a deontic reading, respectively.

The range of meanings within the scope of dynamic modality covers primarily the notions such as circumstantial or neutral possibility in a broad sense, an (in)animate

[8] S*mjeti* is used only to denote deontic modality, in particular permission and therefore lacks polysemous characterization of other modals (Knežević & Brdar, 2011).

subject's physical or mental ability, or willingness (Palmer, 1990; Palmer, 2001).[9] Each type of meaning is exemplified as follows:

13. *It can be very hot in summer here.*

14. *She can speak three languages. / Amphibious cars can drive on water.*

15. *He will open it for you.*

Whereas in sentence (13) the modal implies neutral possibility of the state of affairs,[10] in (14) it refers to a subject's inherent ability or in the case of an inanimate subject some inherent characteristics which make a state of affairs possible. The distinctive modal meanings exemplified in (13) and (14) parallel Radden and Dirven's (2007) distinction between Intrinsic modality, in particular intrinsic possibility, concerned with potentialities that arise from intrinsic features of either circumstances or a thing, that is, the sources external from the speaker, and Disposition modality, which refers to a person's or thing's inherent abilities that have the potential for actualization. In sentence (15), *will* implies a subject's volition to perform the action. As can be noted, only the modal meanings of *can* in (14) and *will* in (15) share the notion of subject-orientation.

With respect to Croatian, the meanings subsumed under the domain of dynamic modality, in particular (theoretical) possibility and ability are realized by the modal *moći* (16, 17). The notion of ability may also be signaled by modal verbs *umjeti* and *znati* (18), while *htjeti* (19) is used to denote volition (Kalogjera, 1982). [11]

16. *Autobus može stići na vrijeme.*

[9] The status of volition has been treated differently in literature on modality. Thus, Palmer (1986) subsumes volition under the category of deontic modality, while in the later edition on Mood and Modality (2001), volition or willingness is treated as a type of dynamic modality.

[10] According to Nuyts (2006), these instances illustrate situational dynamic modality.

[11] Silić and Pranjković (2005) label the verbs *umjeti, znati* and *htjeti* as modal verbs.

17. *On može podignuti tri vreće ugljena.*

18. *On umije/zna čuvati tajnu.*

19. *Hoćete li (želite li) doći s nama večeras?*[12]

Apart from the listed meanings, the semantic scope of dynamic modality may extend to some other domains, such as the existential use of modals *may* and *can* (Palmer, 1990), as illustrated in the following example:

20. *The squid of the genus Loligo can be as much as two feet long.* [13]

According to Palmer (1990), the most likely interpretation of the above sentence suggests that only some, but not all members of the animal species reach the given size. In other words, the meaning of *can* refers to the possibility which can be interpreted in occasional but not absolute terms. Similarly, in the sentence:

21. *The process may be carried out indiscriminately by the wind or by insects which fly from flower to flower.*

the possibility reading of *may* suggests that the process may sometimes or often happen. Though *may* is typically associated with epistemic readings, its use in this and similar instances can hardly be interpreted in the epistemic sense. In other words, the possibility reading does not follow from a writer's subjective evaluation but rather denotes a state of affairs that can be checked against some objectively measurable data (Facchinetti, 2003). Huddleston (1971) labels such existential uses of the modal *qualified generalizations*,

[12] Examples (16-18) were taken from Kalogjera (1982, p. 31), while example (19) was taken from Kalogjera (p. 73).

[13] Examples (20) and (21) were taken from Palmer (1990, pp. 107-108), respectively.

adding that they are typically encountered in scientific texts, while Palmer (1990) proposes the term *existential modality*.

The use of the Croatian modal *moći* may also be associated with congruent existential meaning, as illustrated in the following example extracted from the Croatian research article corpus:

> 22. *Iako su spolne razlike u depresivnosti dobro dokumentirane, njihovi uzroci i mehanizmi koji mogu biti u podlozi još uvijek nisu razjašnjeni (Hankin, 2009).* (PT6)

However, the existential uses of English *may* and its Croatian cognate *moći* are discussed in more detail in Chapter 4 on the corpus analysis of the modal verbs explored in this study.

2.1.3.3 Epistemic modality. Drawing on the Greek origin of its name (*episteme = 'knowledge'*),[14] epistemic modality may be characterized as dealing with a speaker's judgment of knowledge (provided that the term is taken broadly enough) which underlies the epistemic qualification and consequently a degree of its strength. For example, in the sentence *He may be coming this weekend* based on the judgment of whatever circumstances (i.e. knowledge), the choice of the modal auxiliary *may* indicates that a speaker expresses a higher degree of reservation than indicated by the modal must as in *He must be coming this weekend*.

In both the traditional and cognitively-oriented approaches, definitions of epistemic modality seem to share a common core, encompassing the notions such as speaker's judgment, possibility, and strength of commitment towards a proposition, as evident below:

[14] Radden and Dirven (2007, p. 234)

1. *"The term 'epistemic' should apply not simply to modal systems that basically involve the notions of possibility and necessity, but to any modal system that indicates the degree of commitment by the speaker to what he says."* (Palmer, 1986, p. 51)

2. *Epistemic modality deals with matters such as "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."* (Coates, 1983, p. 18)

3. *"... epistemic modality concerns itself with the degree of commitment on the part of the speaker for his or her utterance."* (de Haan, 1999, p. 2)

4. *"...epistemic modality concerns an estimation of the likelihood that (some aspect of) a certain state of affairs is/has been/will be true (or false) in the context of the possible world under consideration."* (Nuyts, 2001, pp. 21-22)

5. *Epistemic modality is "concerned with the speaker's assessment of the potentiality of a state of affairs…" "It is closely tied to the speaker's knowledge and inferences drawn from facts known to him…"* (Radden & Dirven, 2007, p. 234).

Whether referring to a single language (Coates, 1983; Palmer, 1990) or multiple languages (Kalogjera, 1982; Palmer, 1986), epistemic modality has been traditionally discussed within extensive accounts on modality which primarily aim to grasp the semantic and structural properties of the typical linguistic exponents of the distinct modality types.

Cognitive accounts of epistemic modality, on the other hand, go a step further, attempting to account for the underlying cognitive basis of epistemic qualifications (Nuyts, 2001). A case in point is Nuyts' (2001) cognitive-pragmatic framework based on Dutch and German, and partly English language data. Nuyts starts from the premise that "language is an integral subpart of its user's mental world" (p. 5), arguing that epistemic modality is not purely a linguistic phenomenon but cognitive as well and that any attempt to fully account

for it should attempt to involve the latter. Under this view, epistemic qualifications are considered to be "probably a basic category of human conceptualization in general" as they derive from "high level metarepresentational operations over knowledge, in which the performer compares his/her assumptions about a state of affairs to whatever other information about the world (s)he has available and considers relevant to the state of affairs" (Nuyts, 2001, p. 23).[15] The idea of modal epistemic propositions as metarepresentations is also supported by Papafragou (1998a) who argues that epistemic modal devices may be viewed as fitting "into a representational model of mind" in that their use rests "on the ability to reflect on" and evaluate the content residing in one's belief system (p. 32).

2.1.3.3.1 Linguistic realizations of epistemic modality. As is the case with the study of other modality types, epistemic modality is primarily associated with the use of modal auxiliary verbs. Indeed, compared to other exponents of epistemic modality, modal auxiliaries have received significantly more attention in linguistic literature (Nuyts, 2001). Some authors argue that the reasons for the dominant status of modals can be attributed to the dominant status of syntax but also to the fact that modals constitute a close-set and relatively-well-defined class in terms of their morpho-syntactic and semantic properties (Kalogjera, 1982; Perkins, 1983). This, however, does not entail that modals should necessarily be considered as the central exponents of epistemic modality. On the contrary, Nuyts' (2001) empirical analysis of epistemic modality shows that, at least in West-Germanic, epistemic adverbs and adjectives seem to be the most precise exponents of epistemic meanings given that, compared to other epistemic devices, they most clearly indicate the scale of epistemic intensity (cf. the typology below).

[15] However, apart from tackling the cognitive basis of epistemic linguistic realizations, Nuyts' cognitive-pragmatic framework also incorporates their functional dimension, i.e. the role of epistemic evaluations in a particular discourse type.

In English, but also cross-linguistically, epistemic modality can be marked by a range of exponents other than modal auxiliaries, including mood (the subjunctive); tense (e.g. apart from marking the future, the modal *will* may signal epistemic modality),[16] aspect (e.g. progressive infinitive), conditional clauses, negation, etc. (Perkins, 1983; Palmer, 1986; Nuyts, 2001). Furthermore, epistemic modality can be also marked lexically, particularly by means of lexical verbs, modal adjectives, adverbs, nominal expressions, prepositional phrases, etc. (Perkins, 1983; Nuyts, 2001; Radden & Dirven, 2007). Among a plethora of possible epistemic devices, Nuyts (2001) argues that its central exponents in English as in most other West European languages involve the following categories:

a) modal auxiliaries (e.g. *He might/may call tomorrow.*);
b) modal adverbs (e.g. *Maybe/Perhaps he knows it.*);
c) predicatively used modal adjectives (e.g. *It is possible/probable that he knows it.*), and
d) mental state predicates (e.g. *I think/believe that he knows it.*)

According to Nuyts (2001), the other exponents either do not function independently of the central modality exponents or are significantly less frequent than the central ones.

The major categories of modal expressions proposed by Nuyts' taxonomy overlap with those proposed by Radden and Dirven (2007), though their taxonomy is more inclusive. It consists of three broad classes of modal assessments, including modal verbs, modal adjuncts including adverbs (e.g. *perhaps, possibly*), prepositional phrases (e.g. *in all probability*), clauses (e.g. *there is a good chance that*), and modal expressions, encompassing cognition verbs (e.g. *think, believe*) or complex expressions (e.g. *in my opinion*).

[16] This contrast may be illustrated by the following pairs of sentences: *It will be dry and sunny tomorrow* (future prediction) and *That'll be Tom. He always knocks three times* (epistemic certainty).

As already noted, neither modality nor its semantic domains have been explicitly discussed in the Croatian grammar books. However, the survey of the available literature and the reference to the data obtained by the cross-linguistic corpus analysis of the English and Croatian modal auxiliaries (Kalogjera, 1982) show that Croatian possesses the grammatical and lexical markers congruent to the English central epistemic devices, as outlined above. Based on Nuyts' (2001) taxonomy, which is used as the main framework of modal expressions in the present study, the Croatian epistemic modal devices include the following:

a) the modal verb *moći*, which is considered to be the modal of possibility (Besters-Dilger et al., 2009), expressing both epistemic and root meanings (Kalogjera, 1982);

b) particles such as *možda, vjerojatno* (Cro. *čestice* or *partikule*) (Silić & Pranjković, 2005);

c) adverbial expressions taking a *da*-complement clause, as in *sigurno/vjerojatno/moguće je da* (Pranković, 2011);

d) lexical verbs, such as *smatra*ti and *pretpostaviti (Verba sentiendi* or in Croatian *Glagoli osjećanja*), encompassing the notions such as cognition, understanding, or noticing (Katičić, 2002).

2.1.3.3.2 A scalar nature of modal meanings. Eliciting the semantics of epistemic modality immediately brings to light the use of modal verbs, which are, as mentioned above, the most commonly associated and explored linguistic exponents of modality generally, epistemic modality not being an exception in that respect. While the present section introduces the basic semantic characteristics of the epistemic modals in English and Croatian, a more detailed account on the semantics of the selected modals relevant to the

scope of the present study is provided in the analysis of the corpus data. As foreshadowed, the semantics of epistemic modality concerns the concepts such as possibility, prediction, and (logical) necessity or deduction, which is evident in the following examples, respectively:

23. *He may/might be connected with the left wing party.* (= It is possible that/perhaps he is connected with it.)

24. *The lunch will be ready by now.* (= I predict it to be the case.)

25. *The plane should/ought to have landed.* (= I conclude that it has though I am not absolutely positive about it.)

26. *Their car is outside so I guess they must be/have to be at home.* (= This is logically the case.)[17]

As can be seen, the intensity of meanings signaled by the modals ranges from a varying degree of uncertainty to certainty, the end points being marked by the examples (23) and (26), respectively. Thus, *may* refers to a speaker's judgment about the possibility of an event taking place, while *might* is considered to be its more distant or tentative form (Palmer, 1990),[18] indicating a lesser degree of speaker's certainty. Similarly, compared to the modal *must, should* expresses a lesser degree of speaker's certainty with respect to the state of affairs and may be referred to as denoting "weakened logical necessity" (Leech, 2004, p. 101).

If we take a look at the Croatian equivalent modal verbs, we may notice the similarities in terms of a varying strength of epistemic meanings. Though admitting the difficulties in a precise positioning of the modals on the epistemic scale, Kalogjera (1982) tentatively proposes a dual ordering including both the indicative and conditional forms of

[17] According to Leech (2004) *have to* is used chiefly in informal American English to express logical necessity.

[18] Along similar lines, *would* is considered as a more tentative form of *will* (Palmer, 1990).

the modals in a descending order of certainty: *morati - trebati – valjati – moći.*[19] The examples below illustrate the contextualized use of the modals in question:

27. *Ako je večeras otputovao, mora stići/treba stići/valja da stigne/može stići večeras.*

28. *Ako je večeras otputovao, morao bi/trebao bi stići/valjao bi da stigne/mogao bi stići večeras.*[20]

According to Radden and Dirven (2007), gradience is an inherent feature of modality, reflecting the reality it describes. As the authors observe, we are constantly faced with situations that we cannot be certain about, and it is by means of the linguistic exponents of modality, that we express various degrees of certainty when assessing likelihood of a state of affairs. A scalar intensity of modal meanings is commonly discussed in terms of epistemic or deontic scale and is exhibited not only by modals but also by other modality markers as well (Nuyts, 2001; Radden & Dirven, 2007). Nuyts (2001) notes that the notion of epistemic scale reflects the assumption that human thinking may be characterized in terms of a scale rather than discrete categories, which can be viewed as an argument against the traditional bipartite division of modality into the two basic notions, possibility and necessity. The author goes on to suggest that this can be further supported by a range of linguistic possibilities by means of which speakers can fine-tune a degree of likelihood of a state of affairs (eg. *highly likely*, *relatively confident*, etc.). Adopting Radden and Dirven's (2007) model, the position of a selected set of modal verbs and modal adverbs as well as their Croatian cognates along the epistemic scale is presented in Figure 1.

[19] Kalogjera (1982) points to the difficulties in providing an unambiguous ordering of the modals with respect to their indicative and conditional forms as they may evoke different arrangements by native speakers (e.g. it is questionable whether the conditional form of *morati* indicates a higher degree of certainty than *trebati*). In order to account for a more objective arrangement, at least with respect to the modals *morati* and *moći*, Kalogjera proposes the following test: *Može se moguće (možda)/vjerojatno/sigurno* dogoditi* and *Mora se moguće (možda)? / vjerojatno? / sigurno dogoditi* (p. 65).

[20] The examples were taken from Kalogjera (1982, p. 64).

The present study does not deal with the full scale of epistemic meanings outlined here but focuses rather on the epistemic devices occupying low and middle positions on the epistemic scale. That is, it is concerned with the meanings of possibility and probability, as bolded in Figure 1. As demonstrated in the remainder of this study, the epistemic devices conveying the given meanings are considered to be the primary linguistic means used to express the hedging functions in academic writing, which is taken to be the key pragmatic function of the epistemic devices explored in the present study.

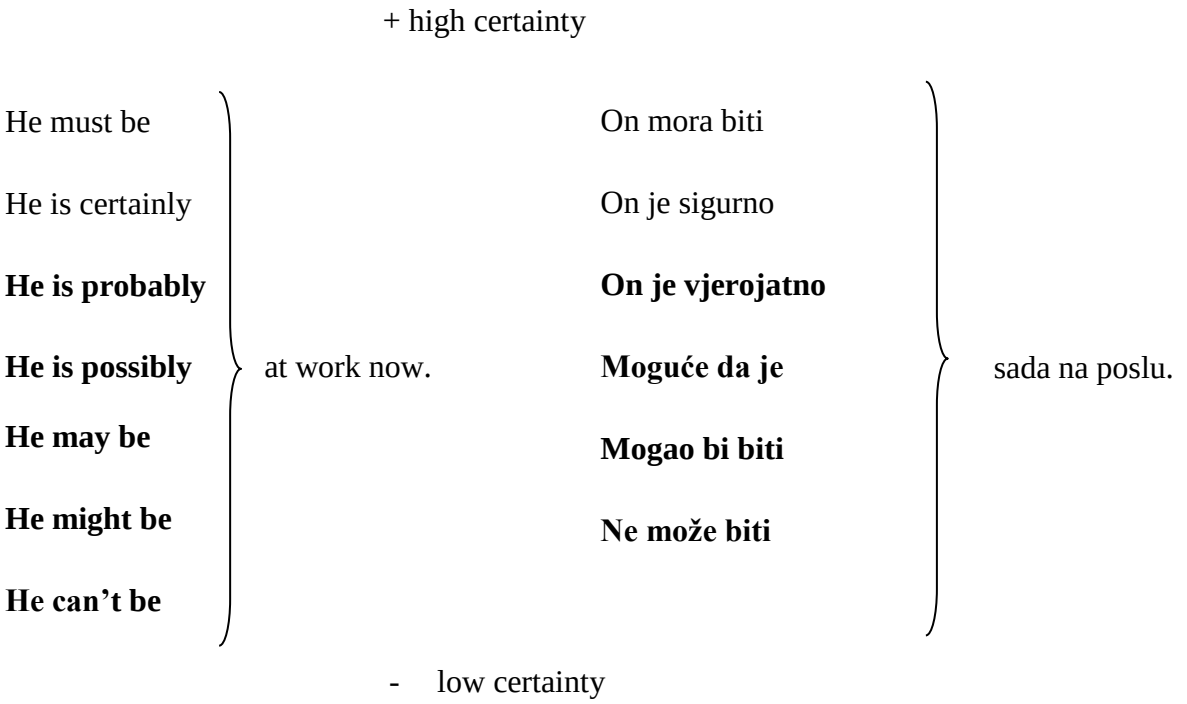

Figure 1. The gradient nature of epistemic modality in English and Croatian

2.1.3.3.3 On the relationship between epistemic and non-epistemic meanings. A simple question of why the same modals are used to express distinct modal meanings not only in English but also cross-linguistically (Croatian including) has given rise to various, fundamentally opposite approaches which have attempted to account for the relationship between epistemic and non-epistemic meanings. Literature on modality usually

distinguishes between two major strands relating to the relationship between the modal concepts, namely polysemous and monosemous strands (Coates, 1983; Depraetere & Reed, 2006), though some authors, such as Papafragou (1998b), also add the ambiguity approach to this taxonomy. As the present study is based on the ambiguous or indeterminate status of the modal meanings, the monosemous and polysemous approaches are illustrated at a very general level.

In broad strokes, the monosemists' view advocates a unitary semantic basis of the modal concepts which receive different interpretations in the context (Depraetere & Reed, 2006).[21] For example, Perkins (1983) argues that modals have a unitary meaning which is susceptible to different interpretations depending on the set of principles or laws which are activated in a given context. The laws may be e.g. natural which basically capture the notion of abilities i.e. the domain of dynamic modality or social laws, corresponding to the deontic modal meanings, such as permission or obligation, whereas epistemic modality concerns the system of rational laws, such as deduction.

In addition, the motivation underlying the use of the same modal forms exhibiting independent meanings has been accounted for by cognitively-based polysemous approaches. For instance, Sweetser's (1991) theory of metaphorical extension rests upon the idea that from a diachronic standpoint many semantic changes of words may be accounted for by our tendency to use a coherent system of metaphors from the real into the mental world. From the synchronic point of view, the same principle may be used to account for polysemy in language as well as a number of abstract uses of the vocabulary from the real, sociophysical world. When it comes to the relationship between root and epistemic modals, Sweetser (1991) adopts the view that given the historical, sociolinguistic and psycholinguistic

[21] A monosemists' view on modality was provided by Papafragou (1998b) whose account is based on the notion that modals do not possess distinct meanings per se but rather share a common schematic semantic structure. The discussion on this view, however, is beyond the scope of this study.

evidence, the epistemic modals developed from root modals which in turn developed from non-modal meanings. This view is reinforced by some longitudinal studies on child language which in terms of order of acquisition show the primacy of root over the epistemic meanings.[22] In order to account for the polysemous nature of English modals, which is evident cross-linguistically even in some typologically unrelated languages, Sweetser (1991) presupposes the existence of the metaphorical mappings between the root meanings of modal verbs from the real world domain (e.g. permission or obligation) onto their corresponding epistemic uses in the domain of reasoning (e.g. possibility or certainty).

Sweetser (1991) broadly adopts the force-dynamic concepts of forces and barriers. According to Talmy (2000, p. 409), force dynamics represents a semantic category which significantly figures in language structure and "most uniquely characterizes the grammatical category of modals as a whole..." Against this background, Sweetser (1991) asserts the parallelism between a sociophysical force in terms of the presence or absence of barriers which (dis)allow an event to occur and mental (epistemic) force i.e. the premises in the speaker's mind which in turn (dis)allow reaching a conclusion.[23] This may be illustrated by contrasting the root meaning of *may*, denoting permission, and its corresponding epistemic use, denoting epistemic possibility. Just like the absence of someone's authority in the sociophysical world allows an act of permission (i.e. a person is granted a permission to act in a certain way), the absence of mental barriers (i.e. a speaker's premises) in the world of reasoning allows an act of reaching a (tentative) epistemic conclusion.

29. *John may go. (= John is not barred [by my or some other] authority from going.)*

[22] As for the criticism on the polysemous account on modality as well as the insights into the acquisitional priority of root over epistemic modals see Papafragou (1998a) and Papafragou (1998b).

[23] Radden and Dirven (2007) also consider the principle of force-dynamics to be one of the defining properties of modality, claiming that a similar force-dynamic pattern may account for the polysemous nature of the modals.

30. *John may be there. (= I am not barred by my premises from the (tentative) conclusion that he is there.)*[24]

In other words, the polysemous reading of *may* (as well as of the other modals) is "seen as the conventionalization…of a metaphorical mapping" between the permission reading in the sociophysical domain and the conclusion reading in the epistemic domain (Sweetser, 1991, p. 64). In that sense, epistemic modality is understood as a metaphorical extension of the sociophysical world into the cognitive one. Overall, it may be argued that, on this account, the relation between root and epistemic modal meanings is not treated as unrelated to each other but rather as a motivated polysemous relationship.

Finally, the ambiguity view (mainly Coates, 1983; Palmer, 1990) is based on the assumption that indeterminacy lies at the heart of understanding the semantics of modality generally (Coates, 1983). Attempting to reconcile the strict monosemous and polysemous approaches, and based on Zadeh's fuzzy-set theory (1972), Coates assumes a continuum of modal meanings which extends from the core exhibiting the prototypical features towards a periphery with a declining tendency in prototypicality. A similar line of thought is supported by Besters-Dilger et al.'s (2009, p. 169) account on modals in the Slavonic languages, in which the authors argue that "modal is a gradient category", whereby some instances are more prototypical as compared to others. To illustrate, the meaning of the English modal *must* in the sentences below may be referred to as showing the prototypical meanings in their both root and epistemic sense, respectively:

31. *You must come at once.*

32. *He must be sick given his looks.*

[24] Examples (29) and (30) and (partly) the corresponding paraphrases were taken from Sweetser (1991, p. 61). The paraphrase in (30) was modified by qualifying the conclusion as tentative, due to the presence of the modal *may* which denotes the lower degree of the speaker's certainty and therefore a more tentative conclusion as opposed to *must*.

In other words, we may easily distinguish between two interpretations, the former referring to issuing something like a command, the latter pointing to the speaker's inference based on the visual evidence.

However, in some cases the intended meaning of a modal is less straightforward, as illustrated by the following example which, if taken out of context, may be interpreted in two possible ways:

33. *He must be out in front of the church.*

(= Somebody has ordered him to be in front of the church) or

(= Based on some kind of evidence, the speaker concludes that he must be in front of the church.)

In other words, the meaning of *must* may be interpreted either in the root sense, denoting someone's obligation laid on the subject but also in the epistemic sense, indicating logical necessity i.e. a speaker's inference that something is necessarily the case as there is obviously no evidence to suggest otherwise. Ambiguity of meanings is also exhibited by *may*, as indicated by the following example:

34. *He may get another chance.*

On the one hand, the sentence may render the epistemic reading paraphrased as *'it is possible that he gets another chance'*, but also the root reading, where the possible paraphrase would be *'he is allowed to get another chance'*. The same concept of ambiguity of meanings is also evident in the semantics of the Croatian modals (Kalogjera, 1982). Thus, without further contextual clues, the sentence below may be interpreted in both the epistemic and root sense:

35. *Marija može napustiti sobu.* [25]

In case of the epistemic reading the possible interpretation could be *Moguće je da Marija napusti sobu. /Moguće je da će Marija napustiti sobu.* (Eng. *It is possible that she will leave the room. /It may be the case that she will leave the room*). By contrast, the root sense of the modal could be paraphrased as *Mariji je dozvoljeno/Marija smije napustiti sobu.* (Eng. *Mary is permitted to leave the room*).

As can be seen from the examples above, the intended meaning of the modals can be explained by means of the paraphrases, as well as by the context though in some cases the context itself may not be revealing enough to exclude alternative readings. Consider the following example taken from Coates (1983):

36. *And anyway I think mental health is a very relative thing- - I mean-mental health must be related to the sort of-general- er-mentality /.../of the community you're living in.* [26]

The epistemic reading of the sentence may be glossed as a speaker's reasonable assumption that mental health is related to the mentality of the community he or she is living in, while in case of a root reading, a possible paraphrase would refer to a speaker imposing mental health to be related to the same, with a possible paraphrase *"It's vital that mental health be..."* (Coates, 1983, p. 16). In other words, even in the presence of the contextual clues, it is possible to identify two distinct meanings of the modal, which according to Coates (1983) stand in either/or relationships, whereby a speaker has to opt for one or the other reading.

However, not every ambiguity of the meaning exhibited by the modals is ambiguous in the same way. Thus, Coates (1983) identifies another, more frequent type of ambiguity

[25] Example (32) was taken from Kalogjera (1982, p. 58).

[26] Examples (36) and (37 a, b) were taken from Coates (1983, pp. 16-17), respectively.

which implies the overlap between epistemic and root readings, the instances of which are conveniently labeled as 'mergers'.[27] In these cases, the two meanings are equally possible and whether one or the other is chosen does not affect the understanding of the whole utterance, as shown by the following example:

37a: *Newcastle Brown is a jolly good beer.*

37b: *Is it?*

37a: *Well, it ought to be at that price.*

The meaning of the modal may be interpreted both in the root sense, denoting a producer's obligation to make a good beer, while the epistemic reading would point to a speaker's conclusion that the high quality of the beer is reflected in the high price (Coates, 1983). This suggests then that in the case of mergers, the root and epistemic meanings stand in both/and relationship i.e. their distinction is neutralized.

Analyzing epistemic modality in English and Serbian, Trbojević-Milošević (2004) also points to the frequent occurrences of indeterminate readings of the Serbian modal verb *moći*, whereby both epistemic and root readings of the modal are equally compatible. For example, in the sentence

38. *"...I najneviniji komentar MOGU da shvate kao tešku kritiku, što ih MOŽE još dublje gurnuti u bolest."* (Trbojević-Milošević, 2004, p. 159)

[27] The third type of indeterminate uses of modals identified by Coates refers to a gradient membership to a given category i.e. modal concept. For example, some instances of the use of modal verbs are more typical or closer to the prototypical meaning or 'core' than the others which may be regarded as peripheral cases. For example, *can* in the sentence *He can walk on his hands* indicates a person's ability i.e. inherent properties which is considered as a core meaning of this modal. In contrast, *can* in *You can find many interesting places there* is more indeterminate as the focus is not so much on someone's ability but rather a neutral possibility.

a dynamic reading of the modal *moći* can be paraphrased as denoting the subjects' inherent ability (i.e. *imaju sposobnost shvatiti*) or even as occasional occurrences of the given event (i.e. *ponekad mogu shvatiti*), in which case the reading of the modal is dynamic (circumstantial). However, one cannot exclude the possibility of epistemic reading, which can be identified by replacing the modal with an equally compatible epistemic modal expression consisting of the modal adverb (*moguće*) and the complement clause, as in: *moguće je da i najneviniji komentar shvaćaju kao tešku kritiku…* (i.e. *it is possible that they take even the most innocent comment as harsh criticism*) (Trbojević-Milošević, 2004).

Discussing the indicated types of ambiguous modal meanings proposed by Coates (1983), Nuyts (2001) is right in observing that the first type (either/or relationship) is easily resolved in actual language use as a follow-up conversation will in one way or the other disclose the meaning of the modal, and thus not give rise to miscommunication. Adopting the ambiguous approach to the meanings of modal auxiliaries, Nuyts (2001) goes on to suggest that in real language use only the second type of ambiguity occurs (both/and relationship), but even with this type it is questionable whether there is any ambiguity if no miscommunication ensues. In other words, even when the two distinctive readings of the modals theoretically overlap, disambiguating the intended meaning is not necessary for the interlocutors and the indeterminacy of the modal meanings will probably go unnoticed. It follows than that the indeterminacy or ambiguity of modal meanings may pose problems primarily for the linguists who based on a lack of sufficient contextual data or perhaps even unfamiliarity with the topic of the discourse may find the identification of the intended meaning relatively difficult (Nuyts, 2001).

In addition to different paraphrases pointing to the root vs. epistemic distinction, Coates (1983) also discusses different prosodic features and structural patterns favoured by either root or epistemic readings as further means of differentiating between the two. To

illustrate, in English the progressive and perfect aspect can be used only with modals in the epistemic but not root sense, as in: *He must be having an affair* but not **He must be doing it at once*.

As for the relation between syntactic patterns and the Croatian modals used in the epistemic sense, Kalogjera (1982) identifies the pattern of the modal verb *(morati, trebati) + da + main verb*, while the infinitive verb would trigger the root meaning, as in:

39. *Mora da oni sami peru prozore. /* They must be washing the windows themselves. [28]

40. *Oni sami moraju prati prozore. /* They must wash the windows themselves.

To sum up, the discussion so far points to some fundamental notions with respect to the modal concepts. First, the existence of various approaches to the semantics of modals only supports the issue raised in the introductory part of this chapter with respect to modality being an elusive linguistic category (Depraetere & Reed, 2006). However, regardless of the underlying principles of the adopted approaches and their explanatory frameworks, it is obvious that modal verbs do exhibit a range of meanings whose interpretations are intrinsically interwoven with the context in which they occur. Prior to the discussion on the approach adopted in this study with respect to all dimensions connected with epistemic modality outlined so far, one more relation needs elaboration, namely the one between epistemic modality and evidentiality.

*2.1.3.3.4 On the relation between epistemic modality and evidentiality***.** Discussing epistemic modality can hardly avoid a reference to its closely related linguistic category of

[28] The sentences (39) and (40) were taken from Kalogjera (1982, p. 59). The original version of sentence (39) is *Oni sami mora da peru prozore*.

evidentiality, regardless of how this relation is understood and what is subsumed under it. Evidentiality can be broadly defined as "a linguistic category whose primary meaning is source of information" (Aikhenvald, 2004, p. 3). Thus, in the sentence *I saw him yesterday*, a speaker expresses that (s)he has personally witnessed (i.e. perceptualized) the event, as indicated by the verb *see*, whereas in the sentence *He was reportedly involved in that affair*, the choice of the underlined adverb signals that a speaker does not have direct access to the information but has acquired it through some other unnamed sources.

Evidentiality is considered to be a universal linguistic category, in a sense that coding the source of information is present in every language which does not mean that every language has it grammaticalized and even those which have it may use the system of evidentials in a different way and to varying extent (Dendale & Tasmowski, 2001; Aikhenvald, 2004; Cornillie, 2009). To be more precise, according to Aikhenvald (2004), only 25% of the world languages have the obligatory system of marking evidentiality grammatically which can be done by various means, such as affixes, clitics, etc.[29] In other words, in those languages it is obligatory to signal whether the information was obtained by a speaker personally or was heard from some other sources, etc. (Aikhenvald, 2004).[30]

On the other hand, the languages which lack grammatical evidentiality (e.g. the Romance and Germanic languages) use different evidential strategies to mark the source of information, including a vast range of open lexical classes such as verbs, adverbs, adjectives, etc. (Aikhenvald, 2007; Cornillie, 2009). For instance, in English evidentiality can be coded by various lexical devices, including the adverbs (e.g. *supposedly, reportedly)*, reporting verbs (e.g. *say, report*), perception verbs (e.g. *see, hear*), etc.

[29] These include mostly Native American and Eurasian languages (Cornillie, 2009).

[30] For example, Macedonian or Bulgarian distinguish between two forms for marking past tense, the definite and the indefinite depending on the presence or absence of a speaker's direct experience of a state of affairs (Čulić-Viskota, 2008).

Croatian also belongs to the group of languages that do not mark evidentiality grammatically (Gnjatović & Matasović, 2010).[31] According to Gnjatović and Matasović (2010), coding a speaker's source of information in Croatian is achieved by means of the lexical or syntactic evidential strategies, the latter encompassing the constructions with the evidential meaning extension. The lexical evidential strategies include the adverbs[32] such as *navodno* (e.g. *On je jučer navodno otišao u školu*), while the syntactic could be illustrated by the use of the perception verbs, such as *čuti* or *vidjeti* and the complement marker *-da* or *-kako,* as in e.g. *Čujem da dolazi*[33] (Gnjatović & Matasović, 2010).

Whether the source of the information is marked grammatically or lexically, there seems to be a broad agreement among scholars on the distinction between two fundamental types of evidence: direct (or firsthand) or indirect (or non-firsthand) (Dendale & Tasmowski, 2001).[34] In most basic terms, direct or firsthand sources of knowledge are based on direct perception which can be a visual, auditory or other sensory piece of evidence a speaker has for making a claim. On the other hand, indirect evidence can be reported, i.e. acquired through others (e.g. hearsay) or based on one's reasoning i.e. inferences (Dendale & Tasmowski, 2001).

According to Papafragou, Li, Choi and Han (2007), the types of evidence are considered to constitute one strand of the core notions of evidential categories. The other one relates to the reliability of the information source, degrees of which can be marked in

[31] In Croatian literature one can find the terms *dokaznost* (Čulić-Viskota, 2003) and *evidencijalnost* (Gnjatović & Matasović, 2010) referring to the linguistic category of evidentiality.

[32]According to the authors, the range of adverbs whose basic function is expressing evidentiality is severely restricted in Croatian.

[33] The example was taken from Gnjatović and Matasović (2010, p. 94).

[34] Gnjatović and Matasović's (2010) categorization of evidentiality in Croatian is based on two criteria. Depending on the type of the access to the information, the authors distinguish between direct and indirect evidentiality (Cro. *posredna and neposredna evidencijalnost*). The second criterion involves the mode of knowing (Cro. *način percepcije/spoznaje*) which can be sensorial, auditory, or inference.

terms of an evidentiality scale or scale of reliability (Papafragou et al., 2007). In other words, based on our knowledge of the world, some types of evidence seem to be more reliable than others.[35] Thus, sensory evidence would more likely occupy a higher rank on the scale compared to some other more cognitively-based evidence (Papafragou et al., 2007). This, however, does not imply that indirect evidence is always less reliable than another type of evidence or vice versa. As Papafragou et al. (2007) argue, the reason why direct evidence is generally considered to be more reliable is the fact that sensory evidence seems to establish our contact with reality more directly, unlike, for example, an inference which "although valid, may prove to have been based on incomplete or unreliable premises and may need to be revisited…" (Papafragou et al., 2007, p. 257).

When it comes to the relation between evidentiality and epistemic modality, though most scholars would agree on their conceptual difference-evidentiality being concerned with the source of information and epistemic modality with a degree of likelihood with respect to proposition being true-this distinction has turned to be more complex when the real language data is analyzed (Dendale & Tasmowski, 2001). There are at least two prevailing approaches with respect to the relation between the two categories (Dendale & Tasmowski, 2001; Cornillie, 2009), one which combines evidentiality and modality in one category either completely (e.g. Chafe, 1986; Palmer, 1986; Palmer, 2001) or partially (van der Auwera & Plungian, 1998).[36]

[35] The hierarchical order of the types of evidence may be supported by typological evidence (Palmer, 2001).

[36] An explicit overlap between the two categories is suggested by van der Auwera and Plungian (1998) which is indeed restricted only to inferential evidentiality by which a speaker indicates evidence based on reasoning. According to the authors, inferential readings overlap with epistemic necessity, in that both refer to certainty of judgments, which can be supported by the fact that at least with respect to English, inferentials are translated by the strong epistemic modal 'must'. Furthermore, unlike other evidentials such as hearsay, inferentials can be gradable. In other words, one can mark a degree of reliability of one's inference which is a feature common to epistemic modality.

The other approach advocates the independent status of each category regardless of the occasional link between them (de Haan, 1999; Nuyts, 2001; Aikhenvald 2004). For example, Palmer (1986) includes Evidentials and Judgments into the semantic domain of epistemic modality. In his 2001 edition on *Mood and Modality*, Palmer takes a rather different view, assigning Evidentials a separate status but still considering evidentiality as a modal system termed as evidential modality. Along with epistemic modality, evidential modality makes a dual system of propositional modality which is concerned with the speaker's attitude with respect to the truth-value or factuality of the proposition (Palmer, 2001). Under this account, epistemic modality refers to judgments, whereas evidential modality concerns an indication of the speaker's evidence with respect to the factuality of the proposition, which is basically a view shared by the scholars who treat evidentiality as an independent category rather than a modal one. Though treated as distinct categories within the modal system, the two seem to overlap in case of the typological category Deductive which is included in both systems as it involves both judgments and evidence (Palmer, 2001).

A different perspective on the nature between evidentiality and epistemic modality is suggested by de Haan (1999) who presupposes the distinct nature between the two given the semantic, syntactic, and diachronic grounds.[37] Supported by typological evidence, de Haan's underlying idea is that both categories deal with evidence, yet in a different manner. According to the author, by using different epistemic modals speakers evaluate the evidence and assign different degrees of certainty to their evaluations. Evidentiality, by contrast,

[37] A similar standpoint is advocated by Aikhenvald (2004) in her in-depth cross-linguistic study on evidentiality. Based on the cross-linguistic evidence, the author takes the explicit view with respect to evidentiality and epistemic modality being fully distinct categories, asserting that grammatical coding of information source has nothing to do with the speaker's commitment towards it. There are, however, instances when evidentials or rather evidential strategies may acquire secondary semantic extensions, such as epistemic possibility or probability but this is not sufficient ground to assume that modality and evidentiality are not distinct categories.

simply asserts the presence of an evidential without reference to its evaluation, though this fact does not deny a close link and occasional overlaps.[38] Nuyts (2001) also supports a distinct status of the two categories, whereby evidentiality deals with the speaker's marking the nature of evidence concerning the state of affairs which is clearly different from his or her epistemic qualification of it. Despite the conceptual difference between the two categories, Nuyts (2001) admits that there are certain domains where the two categories overlap. One refers to (inter)subjectivity which concerns the shared vs. individual status of evidence. The basic idea is that epistemic qualifications which are based on shared evidence tend to be more reliable i.e. objective as compared to those which are based on the evidence being accessed personally. The other dimension which points to a close tie between the two categories concerns the nature of evidence which, according to Nuyts, seems to codetermine the speaker's epistemic evaluation in terms of assigning a certain degree of commitment to the state of affairs. Thus, hearsay evidence tends to encode lesser reliability, whereas an evaluation based on direct evidence appears to be marked as more certain.

However, de Haan (2000) provides counter-evidence to the claim that the strength of epistemic judgment is correlated with the presence and/or nature of evidence. As indicated in the examples below, the same visual evidence is present in all three situations, yet a speaker's evaluation of the state of affairs is different which leads to the conclusion that the direct evidence itself does not determine the strength of evaluation:

41. *John must be at home. The light is on.*
42. *John may be at home. The light is on.*
43. *John is at home. The light is on.*[39]

[38] According to the author, although in some languages there are overlapping cases, this is by no means a universal phenomenon.

[39] Examples 41- 43 were taken from de Haan (2000, p.8).

As de Haan (2000) claims, in example (41), based on some previous knowledge about John's behavior, a speaker attaches a higher degree of certainty to his or her judgment, while in sentence (42), certainty is deemed to be lower. Sentence (43) does not contain any modal element which indicates that although direct evidence (i.e. seeing or hearing John) is not present, a speaker, for some reason, feels no need to express any doubt in his or her judgment. Under this view, an epistemic evaluation is not necessarily dependent on the type of evidence or a mode of knowing, but rather on a speaker's interpretation of the whole scenario (and the direct evidence may be a part of it), which runs against the notion that there is a priori causal relation between the two categories and the hierarchical order of evidence (de Haan, 2000).

Yet, we might assume that the background knowledge a speaker uses to interpret the situation in the above examples can be treated as evidence which underlies a speaker's epistemic evaluation and a strength of commitment attached to it. This line of thought can be found in Radden and Dirven's (2007) account on the interdependent relationship between evidentiality and epistemic modality. Taking a cognitive-linguistic perspective, the authors argue that, based on his or her knowledge or belief, the speaker processes evidence, which can be either perceptual or intuitive and uses it as the basis for the epistemic assessment. In other words, the authors suggest that "in using a modal expression, the speaker assesses the probability of a situation and thereby implies that he has evidence upon which his assessment relies" (p. 235). When a speaker provides an epistemic evaluation, such as *There must be someone living in the house*,[40] asking a person what has made her think so might serve as a test to confirm the notion that there has to be some evidence implied in the epistemic assessment. This idea lends support to Cappelli's (2007, p. 128) view that "in

[40] The example was taken from Radden and Dirven (2007, p. 235).

principle there is no epistemic evaluation without some sort of evidential evaluation (in the broadest possible sense) ..."

The foregoing discussion has aimed to illustrate the complex interaction between evidentiality and epistemic modality and different perspectives offered to account for it. Nevertheless, the position on the distinct nature between the two categories can be said to have reached a broad consensus among contemporary scholars despite different perspectives on their relationship (Nuyts, 2001; Cappelli, 2007). The following section deals with the additional dimensions considered to be pertinent to the use of epistemic modal devices in the present study. These involve subjectivity and intersubjectivity of epistemic evaluations (Nuyts, 2001).

2.1.3.3.5 (Inter)subjectivity and epistemic modality. The issue of subjectivity vs. objectivity of (epistemic) modality is a complex area which has received different treatments in linguistic literature. Thus, based on the view that modality deals with a speaker's subjective attitudes and judgments, Palmer (1986; 1990) considers subjectivity to be its primary criterion. However, Nuyts (2001) observes that subjectivity is a far broader category (possibly an independent semantic category) as it may be coded independently of any modality type by means of a range of lexical devices such as *If you ask me; According to him*, etc. Within the context of modality types, subjectivity can be found across both epistemic and deontic uses, as the following examples illustrate, respectively:

44. *I might consider taking that offer.*

45. *You may sit here.*

While in (44), the epistemic use of *might* points to a speaker's subjective judgment, in (45), the deontic reading of *may* indicates that permission is issued by a speaker which again renders a subjective qualification of the whole utterance.

Though the semantics of epistemic modality is more associated with subjectivity than might be the case with other modality types, not all epistemic qualifications may be regarded as equally subjective or even subjective at all. In order to account for distinct cases of epistemic qualifications in that respect, Lyons (1977) distinguishes between subjective and objective epistemic modality, admitting that a dividing line between the two may be difficult to draw in actual language use. For example, the sentence:

46. *Alfred may be unmarried.*

may render both subjective and objective epistemic interpretations. The epistemic reading would imply that a speaker expresses his or her personal uncertainty about Alfred being unmarried, thus subjectively qualifying the whole utterance. On the other hand, in an imaginary situation in which there is a community of 90 people including Alfred, 30 of which are unmarried, it is objectively possible that Alfred is one of those 30 bachelors. Therefore, the sentence renders an objective epistemic qualification. In other words, in case of a subjectively modalized epistemic qualification, a speaker makes reference to his lack of knowledge, while in case of an objective qualification a reference is made towards an objectively measured possibility that a certain state of affairs is true. The latter might suggest that a speaker is only reporting the objective possibility of a certain event taking place. Lyons (1977) regards objectively modalized statements as acts of telling in which a speaker shows his or her commitment to the factuality of the proposition, while subjective epistemic qualifications are "statements of opinion, or hearsay, or tentative inference, rather than statements of fact…" (p. 799).

An alternative account of the obvious distinction in a degree of subjectivity of epistemic qualifications is offered by Nuyts (2001). Discussing Lyons' (1977) often-cited example under (46), Nuyts points to the fact that any epistemic qualification is based on some kind of

evidence (e.g. knowledge, experience, etc.) which may or may not be linguistically coded in the sentence. What may differentiate the above interpretations, according to Nuyts, is the status of the evidence in terms of it being accessible to the speaker only or shared by the (unidentified) others. Under this interpretation, Lyons' (1977) former epistemic qualification in example (46) would be rendered as more subjective as it represents a speaker's subjective evaluation based on whatever evidence is available. As for the second objective interpretation, Nuyts (2001) suggests the label *intersubjective evidentiality,* given that it better depicts the possibility that a speaker's qualification is based on shared evidence, hence the term intersubjective. In other words, the degree of subjectivity of an epistemic qualification rests upon an individual vs. shared status of the evidence. If the responsibility for an epistemic evaluation lies with the speaker alone, the evaluation is rendered subjective, while in case of an intersubjective evaluation, responsibility is shared by others as well, and therefore rendered more objective. In sum, according to Nuyts (2001), subjectivity and intersubjectivity belong to the category of evidentiality rather than modality, though in actual language use the two seem to be interwoven. While a speaker's evaluation of a state of affairs belongs to the realm of modality, the status of the evidence which the evaluation is based on has to do with evidentiality.

However, in his recent account on (inter)subjectivity, Nuyts (2014) explicitly rejects his earlier idea on (inter)subjectivity as an evidential dimension, and advocates instead its status in terms of a separate semantic category. Nuyts' (2014) essential idea is that intersubjectivity has nothing to do with the status or reliability of the evidence but rather with the status of the assessor[41] who will mark this dimension if relevant in the actual communicative usage. This choice, in turn, will be reflected in the formal properties of the respective epistemic markers. For example, if a speaker wants to underscore that the

[41] The term was adopted from Nuyts (2014).

epistemic evaluation is his or her subjective assessment and that (s)he solely assumes responsibility for it (possibly in contradiction with other opinions), (s)he will be likely to signal it explicitly with a personal pronoun and mental predicate, as in (47). On the other hand, if a reference needs to be made to some general assumption shared by a group of other people, not necessarily including the assessor, the epistemic evaluation is characterized as intersubjective and signaled by an impersonal expression, as in (48).

47. *I think that women are more depressed than men.*

48. *It is possible that women are more depressed than men.*

According to Nuyts (2014), the advantage of this distinction is the fact that it points to the way epistemic markers are actually used in authentic language use, reflecting a speaker's communicative needs. Another advantage, according to Nuyts, is that this dimension can be connected with the formal properties of modal devices, which may be useful in working with corpus data. However, the link between the formal properties of the modal devices and the dimension of (inter)subjectivity is not always that straightforward, at least with respect to academic writing, but this issue is taken up in the subsequent corpus analysis.

2.1.4 The present approach. With respect to the foregoing discussion, the final section in this chapter outlines the broad framework against which the linguistic category of epistemic modality and its relevant dimensions are approached in the present study. It should be pointed out that the final approach adopted for the purposes of the corpus analysis is outlined in Section 2.3.11, following the theoretical account on the role of epistemic modality in academic writing.

The present study is based on the three-partite division of the semantic domain of modality (Nuyts, 2001; Besters-Dilger et al., 2009), acknowledging thus the existence of epistemic, deontic, and dynamic modality, whereby the deontic domain is left out as it does not relate to the overall scope of the present study. The focus is on the role of epistemic modality markers in academic writing, however, the study acknowledges the existence of indeterminate cases (mergers), in which epistemic and dynamic readings of the modal verbs overlap. This particularly relates to the English modal *may* and its Croatian cognate *moći.* This approach is adopted for several reasons. First, the indeterminacy between modal meanings is recognized in the existing Croatian literature on modality, notably Kalogjera's (1982) cross-linguistic study on the use of English and Croatian modal auxiliaries. Second, the ambiguity view on the meanings of the modal verb *may* is the prevailing approach in the related studies on the pragmatics of epistemic modal devices in academic writing (e.g. Hyland, 1998; Vihla, 1999; Varttala, 2001; Vold, 2006a), which the present research broadly follows.

Furthermore, the present empirical analysis draws to a large extent on Nuyts' (2001) framework of epistemic modality discussed in this chapter. In particular, this relates to the very definition of epistemic modality as well as to the taxonomy of the major epistemic modal devices, against which the corpus material in the present study is explored. However, the final taxonomy used in the present analysis extends Nuyts' taxonomy, by including the additional categories, in particular epistemic nouns (e.g. *possibility*) and epistemic-evidential verbs (e.g. *seem*). Furthermore, the study adopts Nuyts' (2001; 2014) distinction between subjective and intersubjective epistemic evaluations. In the present analysis, the former refer to the evaluations assigned to the writers of research articles, while intersubjective encompass the epistemic assessments shared by other scholars, including the writers themselves. Though these dimensions are elaborated in more detail in the subsequent corpus

analysis, at present it suffices to note that they are important to the study of academic writing as an instance of a written language in which multiplicity of voices constitutes one of its core features.

As for the relationship between epistemic modality and evidentiality, the present analysis adopts the view that the two are distinct categories, in that evidentiality gives reference to evidence, while epistemic modality evaluates it. However, the present analysis acknowledges the occasional overlaps between the two, which is elaborated in the discussion on the epistemic-evidential verbs discussed in Chapter 9. So far the discussion has been focused on the characterization of epistemic modality as a linguistic category. The attention now shifts to the outline of their discourse functions within the context of academic writing as the primary aim of the current study.

2.2 Academic discourse

The focus of the present study is the exploration of the pragmatic functions of the epistemic modality devices in the research article as the key written genre in academic discourse. The pragmatics of epistemic markers is considered to be a constituent part of an overall notion of evaluation in academic writing, which generally relates to the ways writers express their stance towards the subject matter of their writing (Thomson & Hunston, 2000). In line with this major objective, the present discussion starts with a broad characterization of academic discourse, illuminating the aspects pertinent to the present purposes. This relates to the notion of the social construction of knowledge as the conceptual background of contemporary research on academic discourse (Hyland, 2004).

As the study is based on the role of the epistemic modal devices in a single academic discipline, the concept of a discourse community is outlined as well as the genre-based approach to the study of academic discourse. With respect to the latter, special attention is given to the rhetorical structure of the research article as the key genre examined in the current study. Against this background, the discussion narrows its focus to the interactive dimension of academic writing, subsumed under a broad notion of evaluation (Thomson & Hunston, 2000). The focus is placed on the notion of scientific hedging, which has been recognized as one of the key pragmatic functions of epistemic modal devices in academic writing. Hedges are discussed within the well-established models addressing their linguistic realizations and pragmatic functions in academic writing, whereby particular attention is given to Hyland's (1998) polypragmatic model of scientific hedging and more extensive concepts of metadiscourse (Hyland, 2005a) and epistemic stance (Hyland, 2005b).

Finally, as the present study takes a cross-cultural perspective, attention is drawn to the scope of intercultural rhetoric and its contribution to the understanding of the cross-cultural specifics of academic writing. The section closes with the outline of some previous

cross-cultural research on the use of epistemic modality in academic writing and the approach adopted in the present study.

2.2.1 General characterization of academic discourse in English. Broadly speaking, academic discourse encompasses "the ways of thinking and using language" in academic settings, forming thus the basis of all social activities associated with academic life (Hyland, 2009, p. 1).[42] A versatile range of activities and tasks performed by a range of different member groups in the academic community has given rise to a plethora of academic genres (Hyland, 2009). Thus, Hyland (2009) distinguishes between different types of academic discourse. Research discourses include the genres such as research articles, conference presentations, book reviews, etc., which aim to produce and display scientific knowledge within the academic community. Instructional discourses deal with dissemination of knowledge to students and generally include pedagogical genres, most notably university lectures, textbooks, seminars, etc. Academic discourse also includes students' genres, such as undergraduate essays, postgraduate theses, etc., collectively labeled as student discourses. In addition, it also encompasses popular discourses, such as TV documentaries, popular science books and articles, etc. whose overall aim is to popularize science and make its insights accessible to the general public.

Linguistically speaking, academic language, in particular academic writing, is characterized by a high level of formality (Hyland, 2006a). One of the typical features of academic writing is lexical density (Carter & McCarthy, 2006; Hyland, 2006a). This is

[42] Throughout this and the remaining chapters, the name of scholar Ken Hyland will be extensively cited. This influential author has paved the way for the study of a number of important phenomena in the field of academic discourse, including scientific hedging which has challenged the traditional conception of scientific writing as objective, impersonal, and isolated from the social context in which it is produced. As Dueñas (2013) argues, given his more than 15 books and 140 articles and book chapters on academic discourse, Ken Hyland can be rightfully called one of the leading authorities in the research on academic discourse worldwide.

reflected in a higher frequency of content words (e.g. nouns, adjectives) rather than grammar words (e.g. pronouns, articles), which makes academic writing densely packed with information (Hyland, 2006a). Another feature commonly associated with academic language is its highly nominalized style (Halliday & Martin, 1993; Carter & McCarthy, 2006; Hyland, 2006a). According to Biber, Johansson, Leech, Conrad and Finegan (1999) academic prose, with its predominantly informational focus, shows a significantly higher frequency of nouns as compared to other word classes. As Carter and McCarthy (2006) note, noun phrases are particularly common in academic writing as they allow packing complex clausal structures into a single nominal element in a clause. The process of nominalization, thus, construes processes as if they were entities, which in academic discourse has more profound implications than being simply a matter of a more economical writing style (Halliday & Martin, 1993). Furthermore, academic writing is characterized as predominantly impersonal. This is particularly manifested in the frequent use of the passive voice, dummy 'it' subject, inanimate subjects (e.g. *research suggests*), which all serve to background the human agency (Carter & McCarthy, 2006; Hyland, 2006a). Overall, the characteristic features of academic language listed here are by no means exhaustive, but can be considered as some of the core ones. What is more important, however, is the awareness that the centrality of these and other linguistic features of academic discourse is largely disciplinary-bound, which in broad terms reflects the specifics of the distinctive scientific disciplines and the way they construct disciplinary knowledge (Hyland, 2006b).

As far as the terminology is concerned, the use of academic language has been studied under different labels. According to Suomela-Salmi and Dervin (2008), until the 1980s the term *scientific discourse* was predominantly used to refer to the language of 'hard' sciences (e.g. medicine). However, the term *academic discourse* has gradually become more preferred in Anglo-Saxon literature due its more inclusive connotations, particularly with

respect to a range of 'soft' sciences, such as arts and humanities (Suomela-Salmi & Dervin, 2008).

A notable exception in that respect can be found in the influential publications by Biber et al. (1999) and Biber (2006b) who favor the term *register*. According to Biber (2006b), unlike genre-based approaches which rest upon the premise that genres are shaped by the practices of the discourse communities in which they are produced, the term *register* is used to refer to "situationally-defined varieties described for their characteristic lexico-grammatical features" (p. 11). Registers such as news, fiction, academic prose, etc. are understood as broad categories which can refer to different levels of generality (Biber et al., 1999). Thus, academic prose is a general register comprising different texts, such as book extracts or research articles, while introductory sections in research articles may be seen as more specified registers (Biber, 2006b).

In this study the term *academic discourse* is adopted for a variety of reasons that are accounted for throughout this section. At present, it suffices to note that the study is based on the idea of language use as a form of social practice (Fairclough, 1993). As previously noted, applied to academic discourse, this means that the use of academic language, taken in the broadest sense, is not possible to fully understand without taking into consideration a wider social context or more precisely the specifics of discourse communities in which it functions. In that sense and with respect to the main focus of this investigation, the current study follows the major contemporary strands in studying academic discourse within the EAP framework (Swales, 1990; Hyland, 2004; Hyland, 2009; Bhatia, 2014). In addition, it follows the contemporary discourse-oriented accounts of the Croatian language, in which the term *akademski diskurs* (Eng. *academic discourse*) has become established (Kovačević & Badurina, 2002; Badurina, 2008; Jurčić Katunar, 2011).

2.2.1.1 The social constructionists' view on knowledge. Traditionally, academic discourse, in particular academic writing, is seen as a form of an objective, neutral, and factual description of scientific phenomena, whereby the role of a writer as a creator of a scientific text is reduced to a mere transmitter of natural facts to a broad audience (Bazerman, 1988; Hyland, 1998; Hyland, 2004). This view on academic discourse reflects the positivists' paradigm which postulates the existence of a conceivable reality governed by unchanging natural phenomena (Milas, 2005). Under such a view, the role of science is to discover the truth about the natural world whose existence is independent of the subject who describes it (Hyland, 1998). In other words, science serves to present a literal description of the world as well as to account for the laws that are part of the objective reality rather than to provide a subjective projection of what we believe the world is like (Knorr-Cetina, 1981; Milas, 2005).

Towards the end of the 20th century, however, with a growing understanding of academic writing as a form of socially situated language use, research on academic writing shifts its focus to the exploration of the role of a disciplinary context in the process of writing (Hyland, 2011). The idea of constructing scientific knowledge as an instance of a community-based practice largely draws on Kuhn's seminal work (1996) *The Structure of Scientific Revolutions* which, among others, marked a break from the positivist's ideal of objective and accurate knowledge and, in a sense, revolutionized the idea of a socially constructed and conditioned scientific truth (Oraić Tolić, 2011).

On a more general note, social constructionism is a theoretical orientation in the social sciences and humanities which is based on the idea that social phenomena and reality in general are constructed through social interactions.[43] The underlying assumption is that

[43] Retrieved from http://struna.ihjj.hr/search-do/?q=dru%C5%A1tveni+konstruktivizam#container

knowledge, but also facts, texts, language, etc. are entities that constitute and define social communities which are in turn sustained by these entities (Bruffee, 1986). Social constructionism, which may be regarded as central to the contemporary conceptualization of academic discourse, challenges the idea of taken-for-granted knowledge conceived of as an objective representation of the outer world and views it instead as socially constructed and agreed upon by people in the course of social actions (Burr, 1995; Hyland, 2009). This idea draws on Kuhn's (1996) central concept of a scientific paradigm. Paradigms can be defined as the "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners" (Kuhn, 1996, p. x). The scientific truth, therefore, does not reflect reality but is accounted for within or by means of a paradigm, which is in turn a social construct made by the consensus of scholars constituting a particular professional community (Oraić Tolić, 2011).

Contrasting the objectivists' and constructionists' conceptualization of science, Knorr-Cetina (1981) argues that the latter (as the name itself suggests) assumes a scientific enquiry to be of constructive rather than descriptive nature. Under such a view, knowledge is derived from our interpretation of reality which is always based on a certain perspective, serving "some interests rather than others" (Burr, 1995, p. 4). Accounting for the social constructionists' view on generating knowledge, Bruffee (1986) argues that we do not deal with physical reality per se but with our beliefs of it. In other words, knowledge is generated once our beliefs of reality are acknowledged socially.

In light of such reasoning, academic writing is no longer seen as a reflection or report on what is assumed to be the objective reality but rather as the written product of an essentially social activity. In other words, what is proposed as academic knowledge gains credit only when socially justified (Hyland, 2009). By going through a peer-reviewed process, the proposed knowledge is socially produced through interactions, negotiations, and

finally the approval of members of a respective discourse community (Hyland, 2004). This underscores the social dimension of science which is regarded as a social institution in which knowledge is codified and evaluated in line with the agreed-upon disciplinary standards (Oraić Tolić, 2011).

In the academic context, the concept of a discourse community is, therefore, central to the study of its discourse as it is within a disciplinary context that scientific knowledge is produced and sustained (Hyland, 2004). However, this process goes both ways, implying that discourse communities are also shaped and sustained by that knowledge (Hyland, 2009). This view is supported by Becher and Trowler (2001) who point out that "disciplinary knowledge forms are to a large extent constituted and instantiated socially…and their constitution has a reciprocal effect on the cultures from which they spring" (p. 23). To sum up, the study on the way scientific knowledge is constructed in academic texts is intrinsically linked to the conceptualization of academic discourse as a form of social practice in which the notion of a discourse community has one of the most prominent roles.

2.2.1.2 The discourse community in the context of academic discourse. In contemporary discourse analysis, the term discourse community is used to refer to "a group of writers (or speakers) who share a communicative purpose and use commonly agreed texts to achieve these purposes" (Hyland & Paltridge, 2011, p. 334).[44] With respect to the academic setting, Swales' (1990) concept of discourse community has received much

[44] The equivalent term *diskursna zajednica* or its slightly modified form *diskurzivna zajednica* (Eng. *discourse community)* may be encountered in the Croatian linguistic literature (Ivanetić, 2003; Jurčić Katunar, 2013). In addition, Škiljan (2000) uses the term *komunikacijski kolektivi* (Eng. *communicative groups*) which refers to the speech community of a particular social group (e.g. scientific communities, political parties, trade unions, etc.).

attention. Swales (1990) notes that discourse communities represent "sociorhetorical networks that form in order to work towards sets of common goals" (p. 9). According to the author, discourse communities have their specific genres which the members are familiar with. Conversely, these genres are used to pursue the goals of discourse communities. Swales (1990) sets up several criteria that a group has to meet in order to have the status of a discourse community. These include the sharing of a public goal, the exchange of information among its members as well as different forms of intercommunication, a single or multiple genres which conform to the expectations of a discourse community, a common terminology, and a diverse membership consisting of experienced members and novices. Hyland (2004) uses the term disciplinary culture, while Becher and Trowler (2001) adopt the interesting metaphorical expression academic tribes and territories, whereby the former refers to particular disciplinary cultures, and the latter to their respective domains of study.

Discourse communities in science are conventionally divided into natural sciences, humanities, and social sciences (Hyland, 2009). Hyland discusses these in terms of knowledge domains rather than academic disciplines, given that the former are understood as broader and more stable categories. Knowledge domains are broadly divided into two main categories: 'hard' and 'soft', whereby 'hard' primarily encompass sciences and engineering, and 'soft' humanities with social sciences placed in between.[45]

They exhibit distinctive natures of knowledge which encompass different objects of enquiries, relations between a researcher and knowledge, procedures, and research results (Becher & Trowler, 2001). Generally, 'hard' sciences are characterized as more empirical

[45] Becher (1994) provides a more fine-grained taxonomy of knowledge domains, dividing them into pure sciences or 'hard-pure' (e.g. physics); humanities (e.g. history) and social sciences (e.g. anthropology) or 'soft'-pure; technologies (e.g. mechanical engineering) or 'hard'-applied, and applied social sciences (e.g. education) or 'soft'-applied.

and objective, with a linear knowledge growth; they put more emphasis on experimental methodology, and rely on structured formats of genres (Hyland, 2009). By contrast, 'soft' sciences are more interpretative, with knowledge more dispersed; they rely more on argumentation, have a wider readership, and less structured genres (Hyland, 2009). While in pure 'hard' sciences knowledge is conceived as cumulative and atomistic, resulting in discovery or explanation, in pure 'soft' sciences such as social sciences and humanities it is characterized as holistic and reiterative, resulting in interpretation (Becher, 1994).

These broad disciplinary characteristics are reflected in the distinctive conventions of academic writing. As Becher and Trowler (2001) note, the disciplinary cultures exhibit different forms of the way argumentation is presented, elaborated, reported, etc. For instance, examining citation practices across several 'hard' and 'soft' sciences, Hyland (2004) found that academic texts of 'hard' sciences show a higher frequency of reporting structures which downplay the author's presence (e.g. *As demonstrated by previous studies…*). By contrast, in the humanities a more prominent role is given to human subjects and their contribution to the existing body of knowledge (e.g. *X demonstrates that…*). Such rhetorical practices reflect the epistemological foundations but also rhetorical conventions of the given disciplines. In line with the epistemological belief of knowledge created through objective measurements, 'hard' sciences foreground scientific findings rather than agents responsible for them (Hyland, 2004). Conversely, 'soft' sciences place more emphasis on human involvement in developing scientific knowledge which is conceptualized as a shared process, accounting for a more visible authorship in reporting on other people's work (Hyland, 2004).

Warning against the conceptualization of academic discourse in terms of a strict 'hard' vs. 'soft' sciences dichotomy, Hyland (2009) suggests that the distinctive nature of the scientific disciplines should be better regarded as a continuum. One reason is that even

the disciplines themselves may have subfields which are more inclined towards one rather than the other end of the continuum. For example, in the realm of psychology, experimental psychology tends to be characterized as 'harder' as compared to some other sub-domains, such as e.g. psychoanalysis. Conceding to the observations that discourse communities may be viewed as rather static and unitary constructs with the established rules of language use, Hyland (2004; 2009) advocates a rather flexible notion of discourse communities. In other words, they should be regarded as heterogeneous constructs of well-established but also contested ideas, individuality and multiplicity of opinions, high-profile authorities and temporary members who in different ways engage in and also shape discourse practices.

Overall, the understanding that scientific knowledge is socially constructed within the realms of discourse communities and in accordance with their disciplinary specifics makes the characterization of academic discourse as uniform hardly sustainable (Hyland, 2004). It is indisputable that there are some general characteristics of academic discourse which along with the above discussed common linguistic features involve logical thinking, ethical principles, acknowledging sources, etc. (Hyland, 2004). However, studying academic discourse today essentially means studying distinctive disciplinary conventions, which as Hyland (2004) observes, may be more relevant than those assumed to be common to all disciplines.

As announced in the introductory part, the present study focuses on a particular aspect of evaluative language use in a single 'soft' discipline, viz. psychology. In order to gain more understanding of the way knowledge is constructed in the given discipline and how it reflects on the particular conventions of the disciplinary writing examined subsequently, a broad overview of psychology as a social science is provided in the section below. It should be noted that the following discussion is based on the source literature and

supplemented by the insights gained from the interviews conducted with psychology scholars (cf. Methodological framework).

2.2.1.3 Psychology as a social science. Psychology is a social science which seeks to describe, account for, predict, and control human behavior and mental processes (Rathus, 1997/2000). It aims to grasp the nature, functions and phenomena in the cognitive, affective, and conative i.e. motivational sphere of mental processes in general and in a range of applied settings, such as schools, workplace, relationships, etc. In addition, it explores various experiences and states in the aforementioned domains of mental processes, with the aim of understanding the difficulties in one's functioning, as well as the processes that can help increase a person's well-being. Whereas in natural sciences the role of the theories is related to establishing the links between the already postulated laws and accounting for them, in social sciences, such as psychology, the well-established laws are much rarer, which consequently makes the theories more speculative and replete with hypothetical content (Milas, 2005).

It may be argued that the main constraints of psychology as a scientific discipline relate to its mere subject matter, i.e. mental processes which cannot be studied as some 'physical entities', or directly observable phenomena (Milas, 2005). Rather, psychologists attempt to understand and learn something more about them indirectly, i.e. via their effects or based on what a person is willing to say about them (e.g. how he/she feels, what his/her attitudes are towards something, etc.). The latter concerns self-reports, which despite being one of the most common research methods in a range of sub-disciplines in psychology, may be constrained in multiple ways, as illustrated by one of my informants' comments:

> "… We can never be sure if particular numbers have the same meaning for different individuals. Even if we assign values, such as *često, ponekad, rijetko*, etc. (Engl. *often, sometimes, rarely*) to the specific numbers, we cannot know for sure that different people mean the same when they mark the response *often*." (Interviewee 1)

In addition, the data gathered in that way often depend on the extent particular mental processes are susceptible to introspection as well as how scholars choose to approach them, in other words, what questions they make and what measures they select in their research. As my informants observed, some of the principal constraints in psychology research may involve questions, such as: "To what extent is our sample of data representative for the phenomenon under consideration?" or "To what extent do instruments we use measure the phenomenon of interest in a valid and reliable way?", etc.

These are just some of the constraints in researching human behavior and mental processes that considerably shape the way scholars use language when reporting on research in their writing. As demonstrated in previous research on academic writing (Hyland, 2005b) and as will be demonstrated in the present research, the way knowledge is constructed in the given scientific discipline and the writers' awareness of its limitations, in particular the research methodology, has, in broad strokes, a considerable effect on the degree of caution writers display when conveying their stance. Most notably, this relates to the interpretations of research findings as well as drawing conclusions based on them. As will be shown subsequently, academic writing in psychology is particularly associated with cautious and tentative language by means of which writers avoid the risk of overstatements and unwarranted claims.

The foregoing discussion has dealt with a broad characterization of academic discourse in contemporary Anglo-Saxon literature, with the focus on the concept of the

disciplinary community in general and psychology as a social science in particular. The attention now turns to the account of academic discourse in Croatian.

2.2.2 General characterization of academic discourse in Croatian. The theoretical approaches to academic discourse in the Croatian linguistic literature can be divided into two major strands. The first approach builds on the Slavonic linguistic tradition and is based on the functional stylistic stratification of language (Silić, 2006). Functional stylistics is a branch of the structural linguistic stylistics which is broadly concerned with the functional use of a language in specific realms of human life (Tošović, 2002). It deals with the descriptive accounts of the functional styles which refer to language subsystems distinguished by their distinctive functions, such as administrative, scientific, etc. (Kovačević & Badurina, 2002; Tošović, 2002). The functional styles in Croatian are classified into five major standard types including the official, publicistic, poetic, colloquial, and scientific style (Frančić, Hudaček, & Mihaljević, 2005; Silić, 2006). Though not entirely resistant to the influences of other styles, each major functional style is recognized by the prototypical linguistic characteristics which broadly reflect the contexts of the respective social domains in which they are used.

Guided by the principles of objectivity and abstraction as the fundamental principles of science, the scientific style is characterized as particularly objective, logical, precise, strict, unambiguous, and normative, almost devoid of expressivity in presenting ideas (Zelenika, 1998; Tošović, 2002; Frančić et al., 2005; Silić, 2006). Such a characterization is in accordance with the generic characterization of science which aims to achieve the objective representation of reality, as well as to account for and predict the natural processes and in turn systemize the knowledge about them (Tošović, 2002). Against this background,

the main objective of a scientific text is the transmission of new information, which entails a predominantly informative character of the scientific style (Silobrčić, 1994; Tošović, 2002). Consequently, this means that the social roles of the participants in a scientific communication, i.e. writers as creators of a scientific text and readers as their recipients are diminished, whereby a central role is given to the content (Silić, 2006).

Silić (2006) is explicit in stating that scientific communication is communication with the content, and not with persons who create or formulate it. Furthermore, scientific communication is primarily characterized by its abstract character which is reflected in the prevalence of a range of abstract linguistic categories (Silić, 2006). For example, scientific style shows preference to infinitive verb forms and timeless present tense (or the present tense generally).[46] Furthermore, abstractness of scientific communication and a writer's distance from the content of a scientific text is reflected in the predominant use of the impersonal 3rd person Sg, 1st person Pl (authorial 'we') and the passive voice (Tošović, 2002; Silić, 2006). Any overt expressivity, emotional connotations, and generally a writer's subjective stance are avoided in the scientific style (Tošović, 2002; Silić, 2006). The way the content in a scientific text is organized follows the logical and rational thinking lying at the core of scientific endeavor, which is reflected in the completed sentence structure, and avoidance of inverted word order, ellipsis, undue repetitions, etc. (Silić, 2006). Generally, the scientific style is characterized as predominantly nominal (Tošović, 2002; Frančić et al., 2005). Granted the above, it is evident that the traditional accounts of the scientific style in Croatian rest upon the positivists' view on disseminating scientific knowledge, whereby the role of a scientist is to report on it and convey it objectively to the readership.

[46] Being most neutral in expressing time, the timeless present tense reflects the emphasis of scientific writing on the accounts of permanent features, processes, etc. (Tošović, 2002; Silić, 2006).

Contrary to the standard functional-stylistic approach, more contemporary discourse-oriented accounts of the Croatian language are based on the assumption that language should be analyzed with respect to the complexity of the social context in which it occurs (Ivanetić, 2003; Badurina, 2008). Approaching the analysis of texts from the perspective of pragmatically-oriented text linguistics, Ivanetić (2003) posits that texts (including academic ones) are essentially the forms of a social practice and as such cannot be isolated from the interactive social context which shapes the communication and the texts as its outcome. Along similar lines, Badurina (2008) observes that the dynamic character of the social context determines the complex stratification of a language which extends beyond its functionality. The central idea is that the analysis of discourse should consider not only the text but all other aspects of communication, including the situation in which it occurs as well as the participants. Against this background, academic discourse[47] is conceived as a type of specialized public discourse in terms of the special areas it deals with and a rather limited circle of its participants (Škiljan, 2000; Kovačević & Badurina, 2002). It encompasses different scientific domains and also a wide variety of academic situations in which it is used. This in turn gives rise to different academic genres which to varying extent exhibit the prototypical features of the scientific style, challenging thus its rather monolith characterization in light of the functional stylistic approach. For instance, though a conference presentation is not deprived of the fundamental scientific features, it nevertheless exhibits the characteristics typical of colloquial style, such as pauses, digressions, shorter sentences, etc. (Katnić-Bakaršić, 1999; Kovačević & Badurina, 2002).[48]

Additionally, contemporary accounts of academic discourse in Croatian start from the premise that a scientific text (but equally so any other text) is inherently dialogic,

[47] Škiljan (2000) uses the term *scientific discourse* (Cro. *znanstveni diskurs*).

[48] By contrast, Zelenika (1998) argues that spoken academic genres (e.g. a conference presentation) conform to the same principles of a clear, logical, and accurate flow of ideas which govern written academic genres.

whereby a relation is established with both a scientific idea and potential readers or listeners (Badurina, 2008). The dialogic nature of academic discourse is explicitly present in the polemics whose argumentative (and inherently subjective) overtone makes it perhaps most remote from the prototypical characterization of the scientific style in terms of impersonality and a lack of subjective elements (Badurina, 2008). In addition, the interactive nature of a scientific text may be accounted for by the features such as citing, paraphrasing other scholars' arguments or ideas, taking an approving or disapproving stance towards them, etc. (Katnić-Bakaršić, 1999). All of these may be taken as the presence of other scholars' voices which the writer interacts with (Katnić-Bakaršić, 1999). Such a characterization of the scientific text runs contrary to its monologic nature as seen through the prism of the scientific functional style.

Overall, compared to the traditionally rather linear account of the scientific style, generally based on the characteristics of a written text, a much broader and dynamic concept of academic discourse allows us to recognize diversity and complexity of the language used in the academic setting (Kovačević & Badurina, 2002; Jurčić Katunar, 2011). Additionally, it allows us to approach scientific language as an instance of a socially situated language use which cannot be accounted for without a consideration of the roles of its participants as well as the social context in which it occurs (Katnić-Bakaršić, 2004; Badurina, 2008; Jurčić Katunar, 2011). Such an understanding of academic discourse is congruent to the above discussed conceptualization of academic discourse in English and as such forms the conceptual basis of the present research.

Having introduced the broad characteristics of the contemporary understanding of academic discourse in both languages, with a particular focus on the concept of discourse community, the discussion moves to the broad outline of genre analysis, as one of the most dominant textual approaches to research on academic discourse.

2.2.3 Genre analysis approach to academic discourse. Most generally, genre analysis is concerned with the way language is typically used in particular "institutionalized academic or professional settings" (Bhatia, 2002, p. 22). In that sense, genres are socially recognized as forms of conventionalized language use which members of a particular discourse community use to meet their specific communicative needs (Tardy, 2013). For example, a typical legal expert would easily recognize, understand, and possibly draw up a legal act based on his or her membership in a legal discourse community and a recurrent encounter with texts of that kind.

In an attempt to position genre analysis in the historical development of (written) discourse analysis, Bhatia (2014) identifies different stages in studying written discourse. Early approaches to discourse analysis were primarily directed at exploring characteristic textual features of texts, such as cohesive devices, lexico-grammatical devices, etc. The text, in other words, was not analyzed in relation to its context but rather as its mere product. However, with the development of disciplines such as cognitive psychology, pragmatics, EAP, and others, the focus shifted from the textual features to the organizational patterns of the texts and explorations of how such patterns related to the specific communicative purposes of the discourse communities in which the genres were used (Bhatia, 2014).

With respect to the academic setting, one of the most prominent approaches to genre analysis is the ESP approach. It draws extensively on Swales' (1990) theoretical account of genres as well as his model of analyzing genres in terms of their rhetorical structure (Paltridge, 2013). For Swales (1990) a genre "comprises a class of communicative events, the members of which share some set of communicative purposes" (p. 58). Shared communicative purposes are given the central role in assigning a text the status of a genre as they provide the rationale for the schematic layout of the genre and put constraints on the

content and the style.[49] In other words, distinctive communicative purposes as well as the target audience shape the way content is presented but also impact the use of an array of rhetorical and linguistic choices in distinctive genres. For example, a university textbook is the core pedagogic academic genre, written by knowledgeable scholars for a student population new to the field, with limited expertise on the subject matter (Bhatia, 2002; Hyland, 2005a). For this reason, the established scientific knowledge is presented in a condensed, informative manner. This rationale reflects the way content is organized whereby emphasis is placed on definitions, descriptions, illustrations, etc. which may assist readers to grasp the material more easily. By contrast, in a research article such rhetorical strategies are generally not required, due to the expertise and prior knowledge of the target readers (Bhatia, 2002).

In addition to providing a description of the typical rhetorical and linguistic features of particular genres, genre analysis is also interested in how the same genres are constrained by the distinctive disciplinary communities and their discursive practices. As previously mentioned, each discipline based on its distinctive focus on knowledge and accordingly methodological approaches to its explorations, has developed standardized forms of a rhetorical structure, patterns of argumentation, citation style, etc. (Hyland, 2006b). Indeed, a considerable number of studies have pointed to cross-disciplinary variations with respect to the organizational structure and the use of different metadiscourse strategies in a variety of academic genres, such as research articles, textbooks, PhD theses, etc. (Hyland, 2006b).

[49] Askehave and Swales (2001) reconsider the key status of the communicative purposes in genre recognition, given that in some genres it is difficult, if not impossible, to identify a single communicative purpose. For example, news broadcasts should primarily inform viewers of the current affairs but they are also used to influence public opinion. In an alternative order of the criteria in determining genre status, the content and form are given primacy over the communicative purpose which, on the other hand, does not diminish its importance in genre identification. Generally, the authors opt for reconceptualization of a genre, advocating its status as an open category with rather loose boundaries.

Some of these are cited in the subsequent chapters on the concepts relevant to the purposes of the present study. The final section in this chapter draws attention to the genre of the research article, narrowing its focus to the rhetorical structure of the research article in psychology as the key focus of the present study.

2.2.4 The research article as a key research genre in academic discourse. Bazerman (1988) argues that scientific knowledge is primarily presented in written form, adding that the published "text serves as the definitive form of a claim or argument, following on earlier printed claims and leading to future claims" (p. 18). As Hyland (2009) observes, the fundamental mission of the academic community is producing scientific knowledge, so the genres which most successfully contribute to the accomplishment of that mission gain most recognition and are consequently most attractive to writers and researchers alike. The most likely candidate to match these criteria is the research article (henceforth RA).

According to Atkinson (2013), it has been the primary means for disseminating scientific knowledge in social science and engineering for more than a century and in the case of natural science and medicine even longer. Swales (1990) defines the research article as the written text which reports on the findings of a research conducted by a single author or in collaboration with others. Gačić (2012) notes that a research article[50] describes new scientific knowledge, presents new research findings, novel techniques, methodological procedures and instruments that have not been previously published. It is a novelty and original contribution to the existing knowledge that make the RA a prestigious academic

[50] Gačić (2012) lists the following English terms as alternatives to the label *research article*: scholarly article, original scientific paper and research paper. The equivalent Croatian term for these is *izvorni znanstveni rad*.

genre.[51] Most often it follows a highly structured layout which typically consists of the title, abstract or the summary of the research followed by keywords, and the introduction, method, results and discussion section, with the references at the end (Gačić, 2012). This structure is traditionally labeled as the IMRAD model.[52] According to Oraić Tolić (2011), the model originally developed from the natural sciences, but spread to other empirical sciences and has eventually become the fundamental rhetorical structure of the RA in modern science.

One of the most influential models of the rhetorical organizational structure of a research article is provided by Swales (1990; 2004). In order to make the abstract concept of an underlying rhetorical structure of a research article easier to grasp, Swales makes use of the ecological metaphor and labels his model *Create a Research Space* (CARS). The author is particularly interested in structuring Introductions as they may turn out to be particularly difficult to write given that a writer needs to make decisions with respect to the course of the whole article. Broadly speaking, the model consists of three segments or moves which "represent semantic and functional units of texts that have specific communicative purposes" (Kanoksilapatham, 2007, p. 24). Each move, usually recognized by distinctive phraseology, consists of further sub-parts or steps. Steps need not all be present and in longer Introductions they may be repeated more than once (Swales, 1990; Kanoksilapatham, 2007). In Move 1, writers establish a territory. This relates to emphasizing the significance of their study (Step 1), positioning their research within the general theoretical framework as well as previous research (Step 3). Move 2 refers to establishing the niche, which essentially

[51] Other types of scientific papers include: review articles, preliminary notes, monographs, and scientific projects which have different scopes and objectives with respect to the depth of scientific analysis, implications of findings, etc. (Oraić Tolić, 2011; Gačić, 2012).

[52] Both the IMRD (Swales & Feak, 1994; Nwogu, 1997; Kanoksilapatham, 2007; Atkinson, 2013) and IMRAD labels (Oraić Tolić, 2011; Gačić, 2012) may be found in the literature.

means that writers indicate a gap in the previous research, while in Move 3, this niche is occupied by presenting their research and its main objectives.

2.2.4.1 The research article in psychology. In order to present the general IMRAD framework of the research article in psychology, the section that follows outlines in broad strokes the major rhetorical functions of each RA section. However, no detailed account of the exact move structure is provided, as it does not constitute the major focus of the present study. In addition, the discussion is based on the reports of the empirical studies as these comprise the corpus of the present corpora. Generally, an empirical journal article is written in the shape of an hourglass, starting from the general, narrowing its focus to the specifics of given research, and then progressively moving to the broader scope (Bem, 2002).

a) Introduction

The overall purpose of the Introduction section is to introduce the research problem and account for the significance of addressing it. The research is then contextualized against the state of knowledge and the existing body of research which the study at hand aims to build on (Bem, 2002; APA, 2010). This section usually closes with the rationale of the approach adopted in addressing the research problem, as well as with the outline of the study hypotheses (Milas, 2005; APA, 2010).

b) Method

In order to account for the appropriateness of the research presented, reliability of the results and conclusions drawn, as well as potential subsequent replication of the study, the Method section should provide a detailed description of all the methodological procedures employed (Milas, 2005; APA, 2010). These primarily relate to the account of the

participants' characteristics which is crucial for both research and practice in psychology, sampling procedures, instruments, and the chronological report of the research design (APA, 2010). The Method section is characterized by highly formulaic descriptions of the methodological procedures applied, which is reflected in the use of the formulaic lexical devices and restricted terminology. For Hyland (1998), by conforming to routinized descriptive procedures a writer is positioning his or her research within the established body of knowledge and thus providing rhetorical support for the claims offered. Lim (2006) suggests that the Method section is a necessary thread that binds the Introduction with the Results section. On the one hand, it provides the rationale for the methodology employed, but at the same time serves to convince the readers of the validity of the methodological procedures adopted, thus warding off potential doubts or criticism with respect to the obtained results.

c) Results

The overall purpose of the Results section is to outline the data collected as well as to report on the statistical analyses performed to obtain these data (APA, 2010). For Hyland (1998), the Results section may be considered as the central part of a RA, as it is in this section that new scientific knowledge is presented. The major rhetorical function of the Results section is thus the objective report of the methodological procedures and the presentation of the statistical data. Indeed, this is generally in line with the requirements imposed by the Writing Style Manuals in which it is usually suggested that the conclusions drawn directly from the statistical analysis should be only indicated in the Results section, while broader implications on them should await the Discussion section (Milas, 2005; APA, 2010). However, though a detailed rhetorical analysis of a RA in psychology is not conducted here, as the subsequent corpus analysis shows, the presence of a range of epistemic markers used in the Results section indicates that writers not only report on but

also evaluate the findings in this section. It is obvious that writers find it important to comment on their results immediately after presenting them while in the general discussion they focus more on detailed interpretations. This trend may also account for occasional conflating of the Results and the Discussion sections into one rhetorical section (Bem, 2002). For example, writers may justify the choice of the methodological procedures with respect to the research objectives and consequently research findings, predict the underlying causes which might have contributed to the obtained results, evaluate and compare them with the related research findings, openly admit uncertainties with respect to some unexpected findings, etc. (Ruiying & Alison, 2003; Kanoksilapatham, 2005).

d) Discussion

The Discussion section represents the most persuasive section in research articles (Hyland, 1998). It is here that the writers provide the most extensive evaluation and interpretation of the findings. Additionally, they draw on the original hypotheses in terms of either confirming or overturning them, relate the findings to previous research, account for possible inconsistencies, draw conclusions, etc. The final part of the Discussion section conventionally deals with the theoretical and practical relevance of the research findings, acknowledgment of the potential limitations or unresolved issues and suggestions for future research directions (Bem, 2002; APA, 2010). By moving from the account on specific findings towards more general implications, the Discussion section thus provides a chronology of the topics which might be regarded as a mirror-image of those presented in the Introduction (Bem, 2002).

In addition to the standard IMRAD structure, the research articles in psychology may also report on multiple studies or experiments (APA, 2010), as attested in the present corpus. In those articles, the general Introduction section is followed by the outline of each study

with its own IMRAD structure (or its modification) as well as a separate general discussion of the whole research.

Apart from the standard four sections, a RA consists of an abstract or a short summary which is an additional obligatory constituent commonly considered as a separate genre (Swales, 1990; Hyland, 2004; Samraj, 2005). Abstracts serve different purposes. On the one hand, writers need to persuade readers of the novelty and relevance of their research and thus ensure that their article will be read further on. At the same time, they need to demonstrate their credibility as competent members of a discourse community in dealing with a certain topic (Hyland, 2004). According to Hyland (2004), abstracts have their own rhetorical structure and purpose which significantly differs from those of the remaining body of research articles. While research article aims to persuade readers to accept their claims as legitimate disciplinary knowledge, abstracts are primarily written to attract readers' attention and encourage them to proceed with reading the whole article (Hyland, 2004).

2.2.5 Summary. In order to situate the current research in the context of discourse analysis approaches to the study on academic discourse, the primary purpose of the preceding section was to outline the broad concept of academic discourse in both English and Croatian and pinpoint some major aspects in its characterization deemed as relevant to the purpose of the present study. These aspects primarily relate to the social construction of scientific knowledge which underlies the conceptualization of academic discourse as a form of a socially-situated practice shaped by the specifics of a particular discourse community (Swales, 1990; Hyland, 2004; Bhatia, 2014).

Next, the section illuminated the centrality of the concepts of a discourse community as well as of a genre in the study of academic language. As discourse communities differ in

their subject matter, modes of scientific inquiry, etc., they may exhibit different conventions in constructing and formulating disciplinary knowledge (Hyland, 2006b). Genres, on the other hand, are characterized as texts sharing similar communicative purposes, audiences, structural layouts, which enable disciplinary communities to accomplish communicatively their goals (Swales, 1990). The key genre for disseminating scientific knowledge is the empirical research article and its conventional IMRAD rhetorical structure largely conforms to the steps of the research process itself (APA, 2010).

The chapter that follows narrows its focus to the notion of academic interaction as it is within its scope that the pragmatics of epistemic modality devices is understood and explored here. As the following discussion shows, the broad concept of academic interaction has been studied from multiple perspectives, which are here, for the sake of clarity, subsumed under an overarching notion of evaluation (Thomson & Hunston, 2000).

2.3 Evaluation in academic discourse

2.3.1 Introduction. As previously discussed, the conceptualization of a social construction of scientific knowledge has contributed to a significantly different understanding of the underlying purpose of academic writing as compared to the positivists' approaches. This changing perspective has involved a shift from conceptualizing academic texts as informative accounts of what is conceived to be an absolute scientific truth to socially grounded and primarily persuasive instances of writing, characterized as forms of social interaction between writers and readers (Hyland, 2005a, 2005b).

Such an approach to academic writing reflects the idea of rhetoric of science which postulates that scientific objectivity and truth are not pre-determined but are rather the products of writers' critical thinking and argumentation (Oraić Tolić, 2011). This supports the view against which, "scientific knowledge is seen as less a coherent body of objective truth about the world than a set of justifiable beliefs reached by the scientific discourse community..." (Hyland, 1998, p. 7). Departing from the positivist premise that scientific phenomena are possible to account for in an objective and accurate way, the social constructionist's approach to academic discourse takes the view that scientific observations are always made within particular theoretical frameworks or constructs that writers adopt (Dahl, 2013). Theories, such as those in psychology, are only partly based on the established facts, while the rest is essentially of a speculative nature and based on a set of hypotheses (Milas, 2005). Thus, if the truth does not reside solely in the natural world, as Hyland (2004) observes, there can always be different perspectives and interpretations of research data which makes writers' argumentation critical in gaining credence for their claims. The author goes on to suggest that in order to persuade their readers into the credibility of their claims, writers of academic texts need to conform to disciplinary practices and conventions of how best to tackle scientific problems, build arguments, achieve an adequate level of

assertiveness and caution in presenting their claims, etc. An academic text is thus seen as a piece of argumentative discourse in which both writers and readers actively engage in a shared process of constructing scientific knowledge (Oraić Tolić, 2011; Dahl, 2013).

Against this background, recent linguistic literature has witnessed a considerable interest into the interactive dimension of academic discourse. In a terminological flux of different approaches, the overarching term ***evaluation*** has turned out to be a convenient candidate for subsuming different perspectives to the study of academic interaction (Thomson & Hunston, 2000). Evaluation refers to "the expression of the speaker or writer's attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about" (Thomson & Hunston, 2000, p. 5) and as such is comparable to other systems dealing with the interpersonal meanings of language is use, such as **modality** (Halliday & Matthiessen, 2004), **appraisal** (Martin, 2000); **stance** (Biber & Finegan, 1989), etc. As a way of illustration, for Halliday and Matthiessen (2004, p. 116) the modality system "construes a region of uncertainty where I can express, or ask you to express, an assessment of the validity of what is being said." Martin (2000) uses the term *appraisal* to cover a set of options writers or speakers have when expressing attitudinal meanings such as affect (expressing emotions), judgment (dealing with moral assessments), and appreciation (concerning aesthetic assessments).

In the context of academic writing, a broad concept of evaluation and its linguistic manifestations have been studied within a range of different explanatory frameworks, such as **hedging** (Salager-Meyer, 1994; Hyland, 1998) both as a stand-alone category (Markkanen & Schröder, 1997; Hyland, 1998) or as a part of more encompassing models of academic interaction such as **metadiscourse** (Vande Kopple, 1985; Hyland & Tse, 2004); **stance and engagement** (Hyland, 2005b); **boosting** (Hyland, 2000); **modality** (Vihla, 1999); **epistemic modality** (Vold, 2006a, 2006b); **stance** (Biber, 2006a; Puo, 2013);

attitudinal evaluation (Dueñas, 2010), **writer identity** (Sanderson, 2008), **voice** (Fløttum et al., 2006), etc.

These and other similar approaches concerned with the evaluative potential of academic discourse have a different focus of their interest. For instance, the studies focused on the notion of the authorial voice (e.g. *We believe/claim/argue*) explore how the manifestation of their authorial selves as well as positioning towards the research contributes to the persuasiveness of the claims (Fløttum et al., 2006). Research on attitudinal evaluation (Dueñas, 2010) focuses on the choice of various affective markers writers use to reveal stance towards salient aspects of their research in terms of novelty, significance, etc., which may be taken as an attempt to claim centrality or promote one's research (e.g. *Our novel findings contribute to…)*

In a plethora of approaches into various aspects of evaluation in academic discourse, **hedging** seems to be among the most explored concepts. In simple terms, hedging represents a rhetorical strategy used to decrease the strength of one's claims (Hyland, 1998). In the context of academic writing, hedging is concerned with expressions of probabilities, judgments and speculations rather than certainty of knowledge. This in turn makes hedges the primary means of presenting new knowledge claims awaiting ratification (Hyland, 1998). As a way of illustration, in the sentence below the highlighted expressions all point to a writer's tentativeness and caution in presenting the claims:

> 49. ... *our findings suggest that they are not yet fully mature by 15 years of age, which may be due to structural or neurochemical immaturity.* (DP8)

In the first case, the metonymic structure 'findings suggest' creates the rhetorical effect that it is the findings and not the writers who put forward the suggestion. Reference to non-human subjects as in (49) is one of the conventional linguistic means in academic writing

used to obscure the source of the claim and thus rhetorically diminish responsibility for it. In addition, the choice of the verb *suggest* implies that, for whatever reason connected to the research, a writer is not ready to be fully committed to the claim. A higher level of commitment to the claim would be achieved by the choice of other verbs, e.g. *show* or *demonstrate* whose semantics clearly signals greater confidence in the proposed claims. Finally, the modal verb *may* indicates a writer's tentative judgment on the possibility rather than certainty concerning the given state of affairs. Again, this can be best illustrated if compared with the indicative form of the verb *to be*, which would suggest that a writer is fully committed to the claim, as in:

> 49.' *... our findings suggest that they are not yet fully mature by 15 years of age, which is due to structural or neurochemical immaturity.* (DP8)

While hedges are generally concerned with expressing caution and tentativeness in making a full warrant to the proposed claim, **boosters** are used to increase the strength of one's claims (Hyland, 1998; Hyland, 2000). The presence of a booster signals that a writer asserts their claims with confidence and a high degree of conviction (Hyland, 1998). This may be illustrated by the use of the modal *must* as shown in the sentence below:

> 50. *However, we have also provided evidence that the social context is unique and that cognitive learning models, although useful, must be expanded to account for the additional complexity brought about when these models are applied to the social world.* (JPSP1)

Another important domain of research on the interactive nature of academic discourse has been conducted under the label of **stance** (Biber et al., 1999; Biber, 2006a). Stance is a broad term covering meanings such as a speaker's personal feelings, attitudes, value judgments or assessments. Though different in scope, a range of different models of stance in academic writing recognize epistemic and attitudinal stance as its two fundamental

components. While epistemic stance is, among others, concerned with indications of a speaker's (un)certainty in the information, attitudinal stance is used to mark attitudes or emotions.

With respect to the linguistic means used for expressing the meanings encompassed by the above cited categories, research shows that the **epistemic modality markers** are the central devices used by writers to hedge or boost the strength of the claims or express their epistemic stance towards the subject matter (Holmes, 1984; Hyland, 1998; Biber et al., 1999; Hyland, 2005a, 2005b). This implies that the studies on epistemic modality in academic writing are most often tied to the exploration of hedging functions which may account for rather scarce research on epistemic modality in its own right.

As discussed at length in Chapter 1, the semantics of epistemic modality primarily concerns the estimation of possibility, likelihood or certainty that something is the case and accordingly a speaker's varying degrees of commitment to the propositional content. In academic writing, the use of epistemic modality devices is therefore critical, allowing writers to convey an appropriate degree of commitment to their claims (Hyland, 1998). As previously noted, achieving the right balance between conviction and caution attached to the claims may in turn assist writers in having those claims accepted by the members of a discourse community (Hyland, 2000). Hyland (1998) observes that speculative statements indicating possibilities constitute the majority of statements in scientific writing while those concerning the factual status of the propositions or categorical statements are considerably fewer in comparison. This in turn means that knowledge claims are most frequently expressed in mitigated form, which accounts for the centrality of hedges in academic writing. This is confirmed by research findings which consistently show prevalence of hedges as compared to other stance markers, such as boosters, attitude markers, etc. (Biber et al., 1999; Hyland, 2005a, 2005b).

With respect to the aims of the present study, the main focus is the use of epistemic modality markers in relation to the pragmatic function of hedging as an expression of a writer's stance in academic writing. For this reason, the section that follows discusses the concept of hedging in more detail. In particular, it introduces the general concept of hedging and points to some major perspectives from which it has been studied in general language use. The discussion then narrows its focus to the specifics of the use of hedging in academic writing, particularly concerning their use in research articles.

2.3.2 Linguistic accounts of hedging. In its everyday usage, the word 'hedge' denotes a way of protecting, avoiding or limiting something. Idiomatically speaking, 'hedging your bets', means making effort to reduce a possible risk or danger.[53] If we take a look at the definitions of the linguistic term *hedge*, we may find the same concept of avoidance or protection as implied by the common meaning of the word. Thus, Trask (1996, p. 128) defines it as "an expression added to an utterance which permits the speaker to reduce her/his commitment to what she/he is saying" (e.g. *I think; I suppose; I would guess; It seems to me*). Crystal (2008) notes that the linguistic term *hedge*, derived from a general sense of the word meaning 'evasive or non-committal', refers to an array of devices expressing imprecision or qualification (e.g. *sort of, more or less*). Related terms in the linguistic literature might refer to *downtoners* (Quirk, Greenbaum, Leech, & Svartvik, 1985), *weakeners* (Brown & Levinson, 1987), etc. As for the Croatian language, an equivalent linguistic term *ograda* or any other alternative is not mentioned in the Croatian

[53] The explanation of the term in this and previous sentence was retrieved from the following source: http://dictionary.cambridge.org/dictionary/english/hedge

standard grammar books. However, Anić's (2003) dictionary defines the term *ograda* as a reservation concerning a statement or simply an expression of doubt.[54]

Linguistic hedges are generally associated with the notions such as tentativeness, caution, uncertainty, modesty, indirectness, diplomacy, vagueness, etc. In simple terms, hedges are expressions used to mark a distance from the categorical statements. Motivations for their use may be multiple. As a way of illustration, in saying *This could be true,* the choice of the modal verb suggests that a speaker lacks more reliable information and does not want to fully commit himself or herself to the statement, possibly avoiding being proven wrong. Alternatively, a speaker may deliberately remain vague and thus hide his or her true opinion so as not to sound impolite or offensive, as in *It was interesting, in a way*. Such uses of hedges are clearly associated with the domain of politeness in language in which the concept of hedging has received considerable attention.

Historically, hedges have been explored from different linguistic perspectives, such as semantics, speech act theory, politeness theory, discourse analysis, to name only a few (Markkanen & Schröder, 1997). Early concepts of linguistic hedges are usually associated with Lakoff's (1973) work on the logic of fuzzy concepts. His account of hedges is based on Zadeh's (1965) framework of the fuzzy set logic which presupposes a gradual membership of the elements in a set. Lakoff's major argument reflects the view that the meaning cannot be accounted for in bipolar, clear-cut terms and that speakers possess intuitive feeling that certain lexemes, expressions or sentences are more or less true rather than only true or false (Žic-Fuchs, 1988). In other words, languages possess an array of devices which can signal a degree to which a certain member is a representative of its category (Žic-Fuchs, 1988).

[54] The original dictionary entry for the term ***ograda*** is 'rezerva uz neku tvrdnju' or 'izražena sumnja' (Anić, 2003). The linguistic term *ograda* can be found in some earlier theoretical discussions on hedging and evidentiality (Žic-Fuchs, 1988) and the contrastive analysis on evidentiality in English and Croatian (Čulić-Viskota, 2008). Jurčić Katunar (2011) lists the following Croatian equivalents for the English term ***hedge***: *oznake ograđivanja, ograđivači*, and *ublaživači.*

According to Lakoff (1973), this function is basically performed by hedges or "words whose meaning implicitly involves fuzziness" (p. 471), including the items such as *sort of, kind of, essentially, more or less, practically, principally,* etc.

Subsequent accounts of hedges shift their interest to the pragmatics of hedges, i.e. to the ways hedges function in language use (Fraser, 1975; Holmes, 1984; Markkanen & Schröder, 1997). Thus, Fraser (1975) introduces the concept of 'hedged performatives' to refer to the utterances consisting of the performative verbs such as *apologize, warn, ask,* etc. accompanied by a certain set of modal verbs (e.g. *can, must*) functioning as hedges. The primary function of the modals in such utterances is to attenuate "the illocutionary force of the speech act designated by the verb" (Fraser, 2010). For example, by using the modal verb *must* in *'I must request that you sit down',* a speaker places the focus of the utterance on his or her obligation for making a request rather than imposing it directly on a hearer.

One of the most influential speech act models of hedges can be found in Brown and Levinson's (1987) account on politeness in language where a hedge is defined as "a particle, word, or phrase that modifies the degree of membership of a predicate or noun phrase in a set" (p. 145). According to Brown and Levinson, hedges may have indefinite 'surface forms' and they are generally used as face-saving strategies, particularly in negative politeness. The authors distinguish between several types of hedges. Thus, hedges on illocutionary force include linguistic means speakers use to avoid potential conversational threats. These hedges may come in different forms such as adverbial clauses, e.g. *It's as good as it gets, it seems to me.* Another type of hedges refers to Grice's (1967, as cited in Brown and Levinson, 1987) conversational Maxims and include Quality hedges which suggest a speaker's unwillingness to assume full responsibility to the truth of the utterance, as in *I assume*. In addition, Quantity hedges indicate a lack of precise information, e.g. *more*

or less; to some extent, etc.[55] Brown and Levinson's framework on hedges has had considerable influence on research on hedges primarily in the conversational studies, though, as discussed in next section, the framework has also been used to account for the pragmatic functions of hedges in the academic discourse (Myers, 1989; Meyer, 1997).

As Fraser (2010) observes, there is a general agreement today that hedging is not a grammatical but rather a rhetorical strategy which signals either a speaker's lack of full commitment to the proposition (e.g. *It was sort of acceptable*) or to the force of a speech act (e.g. *Perhaps you might sit while waiting*). As for the linguistic devices used as hedges, it is probably impossible to come up with any definite list of formal devices functioning as hedges as there is not a simple correlation between a linguistic item and hedging functions (Mauranen, 1997). In essence, no linguistic device is inherently a hedge but can only acquire hedging qualities depending on the nature of the context, the speakers' or writers' intentions, background knowledge of the interlocutors, etc. (Markkanen & Schröder, 1997; Clemen, 1997). Nevertheless, linguistic literature has come up with some prototypical devices commonly associated with the function of hedges which primarily cluster around epistemic verbs, nouns, adverbs, and adjectives (e.g. *this might be true*); concessive conjunctions (e.g. *Though this may be true, we…);* indirect speech acts (e.g. *Would you please open the door?*); progressive forms (*I was wondering if*…); *if* clauses (e.g. *If you happen to find time...);* metalinguistic comments (e.g. *theoretically speaking ...),* etc. (Fraser, 2010).

As may be noticed, the rhetorical category of hedging clearly cuts across a range of other categories, such as politeness, vagueness,[56] but also epistemic modality (Clemen,

[55] In addition to the verbal hedges, the hedging function may be achieved by non-verbal means, such as raised eyebrows, the umms, and ahhs, and other hesitations the function of which can be said to be universal (Brown & Levinson, 1987).

[56] Vagueness refers to "inherently and intentionally imprecise" language (Cutting, 2007, p. 4). The typical vague language includes approximators like *sort of, about*, etc. (Cutting, 2007) or vague coordination tags, such as *and so on; or something*, etc. (Biber et al., 1999).

1997). Markkanen and Schröder (1997) argue that the epistemic sense of modal *may* is often listed as a typical hedging expression, indicating thus the overlap between epistemic modality and hedging. In addition, the authors suggest that it is possible to view the relation between the two as either epistemic modality including hedges or vice versa, depending on the departure point of the respective analysis. Though not elaborating the relationship between the two in great detail, Hyland (1998) posits that hedging represents an aspect of epistemic modality which deals with the personal judgments based on insufficient knowledge.

In line with previously discussed Nuyts' (2001) account on epistemic modality as well as the related studies on academic writing (Vihla, 1999; Vold, 2006a, 2006b), the present study adopts the position that epistemic modality is a linguistic category in its own right, whose devices may be used for hedging purposes. In other words, hedging is seen here as a broad pragmatic category encompassing a range of different linguistic means, including epistemic markers. As discussed at length in Chapter 1, the scalar nature of epistemic meanings ranges from epistemic certainty, probability to possibility. Hedging clearly concerns the latter two, however these notions are discussed in more detail in the analysis of the corpus data.

2.3.3 Hedging in academic writing. According to Oraić Tolić (2011), contemporary academic language is prevalently postabsolutistic, indicating that the scientific truth is not guaranteed in advance but is rather a result of the consensus reached in the process of persuasion. Hedging is considered to be one of the most prominent rhetorical strategies contributing to the persuasive character of academic writing (Hyland, 1998). Writing science involves interpretations, speculations, inferences, etc. which requires a cautious use of

language in constructing one's argumentation (Hyland, 1998). It has already been mentioned that the process of writing an academic text involves anticipation of the potential disapproval and rejection of the claims which therefore need to be convincing if they are to gain support by the readers (Silver, 2003). The fact that the claims need to be ratified by a discourse community reveals their potential negatability (Hübler, 1983). Hedges are crucial in that respect as they allow writers to present new claims with an appropriate degree of caution and accuracy, signaling to the readers the extent to which they may be considered reliable (Hyland, 1996b; Hyland, 1998; Hyland, 2005a; Vartalla, 2001). As Toulmin (2003, p. 84) observes, in some "fields of discussion, this is as far as we can go."

In addition, by toning down their claims, writers open up a "discursive space" (Hyland, 2005a, p. 68) for alternative interpretations, indicating that their claims may not be a final say on the matter, which in turn may strengthen the claims and thus ward off potential criticism (Clemen, 1997; Hyland, 1998). Indeed, there is some paradox about the use of hedges in academic writing when compared to their everyday use. As Meyer (1997) argues, while in everyday conversation hedges may be a sign of a weak conversational style, in academic writing their use may strengthen the force of the arguments. The following example may illustrate Meyer's point:

> 51.…*individual differences in desired emotional closeness may be important for understanding psychological outcomes of social interactions.* (PID2)

By using the modal *may* a writer is not claiming that emotional closeness is important but that it is reasonable to assume that the possibility for it exists. Generalization is therefore weakened which paradoxically strengthens its force, making the claim more difficult to dispute (Meyer, 1997). As Meyer (1997) argues, strong, categorical claims are easier to falsify than hedged claims. Qualifying the claims with a nuanced use of the modal words is

central in making them more persuasive, reliable, and therefore more acceptable to the readers (Meyer, 1997; Oraić Tolić, 2011).

In defining hedges in academic writing, the concepts such as lack or avoidance of full commitment, reduced degree of certainty, opinions rather than facts are often foregrounded. Hyland (1998) suggests that hedging in scientific writing is a pragmatic strategy which concerns a careful use of a wide range of lexical and syntactic devices whose purpose is to signal non-assertiveness or tentativeness in constructing scientific claims with an ultimate aim of gaining acceptance by a discourse community. Hedges mark uncertainty and are related to the opinions rather than facts (Hyland, 1998). For Vartalla (2001, p. 34) hedging is "a strategy by which one may indicate different degrees of less than full commitment to conceptualizations of the universe." Crompton (1997) limits hedges to the utterances belonging to the writer only and defines hedges as items "of language which a speaker uses to explicitly qualify his/her lack of commitment to the truth of a proposition he/she utters" (p. 281).

When it comes to the functions of hedges in academic writing, different motivations for their use can be found in literature. Inspired by Lakoff's discussion on hedges, earlier studies associated hedging with the previously mentioned notion of vagueness or fuzziness (Prince et al., as cited in Crompton, 1997). As Clemen (1997) suggests, vague statements function as hedges in contexts where precise data is either impossible to reach, when reference to them is irrelevant, or simply when one is uncertain in the precision of one's claims.

Hedges have also been studied as parts of a larger framework of commentative language which conveys the speaker's attitudes towards the status of the proposition (Skelton, 1997). Examining commentative language in medical research articles, Skelton

makes a distinction between truth judgments (e.g. *I suspect the moon is made of green cheese.)*[57] and value-judgments (e.g. *It is good to hear the moon is made of green cheese.*), though admitting that the boundaries between the two are rather fuzzy given that comments do not have characteristic formal features which distinguish them from non-comments. Under this account, hedges are best viewed as parts of truth-judgments used for mitigation of responsibility or certainty of the truth value of the proposition. Truth judgments are further divided into evidential and speculative judgments. Evidential judgments comment on the empirical evidence; they are basically unhedged and mainly found in the Results section of research articles (e.g. *X is correlated with...*). By contrast, speculative judgments make use of the evidence to speculate and are frequently encountered in the Discussion sections (e.g. *This observation may imply…*).

For Swales (1990) the use of hedges in a research article has to do with anticipating and discouraging negative reactions with respect to the knowledge claims put forward. Thus, hedges are "rhetorical devices used for projecting honesty, modesty and proper caution in self-reports, and for diplomatically creating research space in areas heavily populated by other researchers" (p. 175).

One of the often-cited motivations for using hedges in academic discourse concerns their use in the light of politeness theory (Brown & Levinson, 1987). According to Myers (1989), scientific discourse involves interactions among scholars in which, like in everyday social situations, it is crucial to maintain face. This particularly relates to making claims, which until ratified by a discourse community may pose certain face threatening acts, such as challenging other scholars' work. In order to avoid such impositions, the claims must be mitigated or redressed by means of politeness devices in which hedges play a crucial role.

[57] The bracketed examples illustrating truth- and value-judgments have been extracted from Skelton (1997, p. 45).

For Myers, the role of hedges as the conventional features of academic writing may be reinterpreted as negative politeness devices which aim to avoid transgression of readers' freedom of action (Watts, 2003). To illustrate, the use of the hedge *it seems* in the sentence below indicates a writer's desire not to impose a certain view on readers. Instead, readers are left with the possibility to judge for themselves and perhaps come up with different interpretations. At the same time, the hedge indicates the writer's distance from a categorical claim, saving thus his or her negative face in case of being contradicted or proven wrong.

> 52. *Given the close relationship between working memory capacity and cognitive abilities in adults, it seems reasonable to suggest that this improvement in working memory performance may underpin...* (DP2)

In short, by extending the principles of politeness theory to academic writing, Myers equates the norms of the use of hedges in scientific written communication with those applied in daily interaction, suggesting that the use of hedges has to do primarily with avoiding conflict, a view which was not completely accepted by linguists studying hedging phenomena in academic discourse.

According to Hyland (1998), the main objection to the politeness account on the use of hedges in scientific writing is reducing the use of hedges solely to a face-saving strategy, while neglecting the notion that scientific communication is constrained by the implicit conventions of a discourse community. This particularly relates to the involvement of a reader in reaching a consensus with respect to making knowledge claims (Hyland, 1998). There is no doubt that by modifying claims which might be potentially threatening writers protect their face and those of other scholars but this is not sufficient to encompass the complexity of the functions of hedges in academic writing (Hyland, 1998; Vartalla, 2001). In other words, the use of hedges in academic writing is more a question of reaching a communal acceptance of knowledge claims than it is a matter of interpersonally motivated

politeness as postulated in Brown and Levinson's framework (Vartalla, 2001). The awareness that hedging is a complex rhetorical strategy used to perform multiple functions in academic writing has given rise to more comprehensive accounts of their use. One of the most influential frameworks in that respect is Hyland's (1998) **polypragmatic model of hedges** in research article writing which is discussed in the section that follows.

2.3.4 Hyland's polypragmatic model of scientific hedging. The importance of Hyland's (1998) model of scientific hedges is twofold. Based on the corpus of 28 research articles in biology, the model provides the taxonomy of the most frequent linguistic realizations of hedges which the writers use in expressing reservations towards the claims. On the other hand, it provides a framework aimed to account for the multiplicity of the pragmatic functions hedges perform in the research article as the key research genre.

With respect to the first level of analysis, Hyland distinguishes between lexical and non-lexical or strategic hedging. Lexical hedges encompass the devices prototypically associated with the hedging function, such as modal verbs, modal adjectives, adverbs, nouns, etc. (Holmes, 1984; Hyland, 1996a, 1996b; Vartalla, 2001). By contrast, strategic hedges are not recognized by formal but rather functional criteria and can refer to limitations regarding experimental conditions, a model, theory, or a method or limited state of knowledge. As a way of illustration, in the sentence below, by openly acknowledging the limitations in the methodological design of their study, writers hedge the generalizability of their research findings, protecting themselves from possible criticism:

> 53. *In general, because we did not collect field data or conduct observational studies, we cannot be sure that the effects we found would necessarily generalize to real-world settings.* (JPSP3)

With respect to the pragmatic functions of hedges, Hyland's polypragmatic model starts from the premise that the final purpose of doing and publishing scientific work is gaining acceptance for one's claims. In that sense, the members of a discourse community are given a participating role in the process of ratification of scientific knowledge which can always be refuted based on their interpretation of the writers' message. According to the author, it is the awareness of a possible challenge or refutation of scientific claims which places mitigation as "central to academic writing" (p. 91). In order to increase the chances of gaining acceptance for their claims, two criteria need to be met; the first involves meeting adequacy conditions which refer to matching the content with what is believed to be objective reality. Hedges meeting this criterion, which Hyland labels **content-oriented hedges**, are principally used to present the claims as accurately as possible given a writer's state of knowledge. The use of the second, **reader-oriented group of hedges** is primarily driven by interpersonal motives. These hedges involve meeting acceptability conditions which presuppose that the claims are not intrusive but are conveyed in such a manner that the readers are given opportunity to judge for themselves and thus engage in an implicit dialogue with the writer. This distinction can be exemplified by the following:

> 54. *Thus, it is possible that the effects observed may be the result of some other covarying factor.* (JPSP10)
>
> 55. *Given this assumption, the impact of this work for stereotype threat research could potentially be far reaching.* (JPSP7)

In the first sentence, the choice of the epistemic adjective *possible* indicates that there are sufficient grounds for an assumption but that a fuller commitment to the claim cannot be made, possibly due to a lack of more reliable data.

In the second case, the epistemic qualification indicated by the modal verb *could*, further reinforced by the adverb *potentially* does not seem to refer to the propositional content but

rather addresses the readers, suggesting conventional modesty with respect to highlighting the importance of one's research findings.

Depending on the reasons for the modifications of the statements with respect to the reality, content-oriented hedges are further taxonomized into **accuracy-oriented** and **writer-oriented hedges**. Accuracy-oriented hedges are concerned with the propositions and are further subcategorized into **attribute hedges** which, among others, mark the distance between the obtained research findings to the idealized ones. They are typically realized by adverbs such as *almost, barely, approximately,* etc. and may be used to hedge numerical data. The second type of accuracy hedges concerns **reliability hedges** which are expressed by the prototypical lexical hedges (e.g. modal verbs, adjectives, adverbs, etc.) and are used to denote a level of writer's certainty in his or her claim, e.g. *It is possible that…* or *This is likely to be due…***Writer-oriented hedges,** on the other hand, mark a reduced commitment to the claims and they serve to protect a writer from a possibly mistaken view or inference. The typical exponents of this group of hedges are 'abstract rhetors', i.e. inanimate agents which assume the role of personal subjects and implicitly also the responsibility for the truth value of the proposition (e.g. *The evidence/data suggest…*).

A detailed taxonomy, notwithstanding, Hyland's account is based on the understanding that hedges are concerned with the epistemic use of language which is in its core indeterminate and hard to explicate in strict, rigorous terms. Therefore, as Hyland (1998) notes, any account of hedges must allow for indeterminacy in both semantic and pragmatic terms. A good example of the former relates to polysemy of modal verbs, i.e. indeterminate meanings of certain modal verbs, as discussed in Chapter 2. In a pragmatic sense, indeterminacy essentially indicates the impossibility of drawing sharp boundaries between the categories as hedges are often used to perform different functions simultaneously, functioning at both levels of the model (Hyland, 1998). For instance, while

attempting to indicate a desired degree of precision with respect to the propositional content, writers simultaneously indicate their reluctance to commit themselves strongly to the claims, which may be regarded as a self-protection strategy (Hyland, 1998). In that sense, the same form may function as both a content- and writer-oriented hedge.

In order to account for the imprecise and indeterminate nature of hedges given their polysemous and polypragmatic nature, Hyland adopts Zadeh's (1972) fuzzy set model of graded category membership. It is based on the postulates of the prototype theory which presupposes that the boundaries between memberships to a category are not clear-cut but rather fuzzy. This means that some members are better candidates of category A because they exhibit more of its defining features, unlike the others which, apart from the elements shared with the members of category A, may equally share the features with the members of category B. When these principles are applied to the proposed polypragmatic model, some forms are easily identified as hedges, e.g. *seem, might,* constituting thus a basic-level category of hedges. The categories on a higher level of analysis such as accuracy- and writer-oriented hedges allow for greater indeterminacy between their members, the distinction of which may often be blurred. While some hedges represent the core examples of accuracy-oriented hedges concerned with the propositional content, other members in this category are more peripheral, and thus closer to the functions of writer-oriented hedges.

As Hyland admits on several occasions, any attempt to provide a strict categorization of pragmatic properties with respect to an elusive category such as hedging most likely runs the risk of misrepresenting the natural language use. This acknowledgment basically implies that the interpretation of pragmatic functions assigned to particular forms is "often difficult to confirm with certainty given the high degree of pragmatic indeterminacy of the devices employed" (Hyland, 1998, p. 214). It is interesting to note that the fact that a single hedge

may perform several functions at once may also be regarded as a writer's strategic choice which can hardly be detected by a linguist (Hyland, 1998).

Despite fuzzy boundaries between the categories of hedges, Hyland's explanatory model has been successful in drawing attention to the centrality of hedging in academic writing and has sparked research interest into this concept in academic writing ever since. Indeed, his model has served as a reference point to a number of subsequent studies on scientific hedging both in English (Vartalla, 2001; Koutsantoni, 2006; Šinkūnienė, 2011) and cross-linguistically (Vassileva, 2001; Vold, 2006a; Šinkūnienė, 2011). The major strength of his analysis is that it has provided an account of an inherently polyfunctional nature of hedges, illuminating their versatile behavior in academic writing. Of no less importance of his study is the awareness that the motivation for the use of hedges cannot be accounted for without reference to an institutionalized disciplinary context in which it is situated (Hyland, 1998).

As indicated at the outset of this section, hedging has been studied as a stand-alone category but also as a part of broader frameworks of academic interaction, such as metadiscourse (Hyland, 2005a) and stance and engagement (Hyland, 2005b). It should be noted that in comparison to the earlier accounts (Hyland, 1998), the defining features of hedges in the above stated accounts have remained the same. Consequently, no detailed reference is made to their characterization here. In addition, given that this study focuses on hedging functions of epistemic markers, the following section does not aim to present the concepts in their entirety nor discuss them in great detail. The aim is to provide a broad overview of those models, with a particular focus on the position of hedges.

2.3.5 Hedges as a part of metadiscourse in academic writing. The concept of metadiscourse rests upon a dynamic view of language which implies that communication involves not only transferring information but also engaging with interlocutors and establishing relationships with them (Watts, 2003). In its essence, metadiscourse embodies the premise that communication is not a neutral but rather a socially engaged process in which writers or speakers project themselves in a discourse by signaling their attitudes towards the content but simultaneously also to the audience (Hyland, 2005a).

Metadiscourse models encompass an array of linguistic devices which writers[58] use to organize their texts and convey their personal attitudes both to the subject matter and to the readers in an attempt to get their message across as effectively as possible (Crismore, Markannen, & Steffensen, 1993). Against this background, two fundamental interactive dimensions of metadiscourse are recognized, the textual and the interpersonal. While the former encompasses the devices used to navigate a reader through the text (e.g. text connectives, such as *first, next*), the latter comprises the devices used to evaluate the material and signal a writer's stance towards it.

For instance, in Vande Kopple's (1985) taxonomy, interpersonal metadiscourse includes, among others, *validity markers* (i.e. hedges, such as *perhaps, may*; attitude markers, such as *surprisingly*, and emphatics, such as *clearly*) which is a common term for the items that show a level of commitment to the assessments as well as the assessments of the truth-value of the propositional content. To illustrate the point, in sentence (56) by using

[58] As the focus of the present study is on exploring written dicourse, the discussion will proceed by using writer/reader dichotomy.

the highlighted endophoric marker[59] the writer assists the reader in comprehending the text and guides him or her towards the intended interpretation (Hyland, 2005a).

> 56. *As noted above, the use of certain cues, such as gendered facial features, can help perceivers make reasonably accurate judgments in the absence of more diagnostic information.* (JPSP9)

On the other hand, in sentence (57) the highlighted adjective signals the writers' affective attitude to the propositional content (Hyland, 2005a).

> 57. *Also, considering the increasing popularity of online dating websites, it would be interesting to examine whether daters whose profile pictures display embarrassment are more sought after by other users.* (JPSP3)

According to Hyland (2005a, p. 37) metadiscourse encompasses "self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer (or speaker) to express a viewpoint and engage with readers as members of a particular community." The author goes on to admit that such a concept of metadiscourse clearly overlaps with some other concepts which deal with the interpersonal in language, such as evaluation (Thomson & Hunston, 2000). Hyland (2005a) notes that when writing and speaking we do not only wish to convey the information in a logically structured way but we use the communication acts to achieve certain goals (e.g. gaining acceptance, persuading, etc.) with respect to our audience. This means that the interactive dimension of language is always present in writing and the concept of metadiscourse to a large extent provides a neat framework to explore the ways it is achieved. Related to it is the notion that textual and interpersonal functions of metadiscourse are not to be conceived of as separate functions, as suggested by previous accounts on metadiscourse (Vande Kopple, 1985). Hyland (2005a) takes a rather holistic approach suggesting that these functions work simultaneously in real language use. For

[59] Endophoric markers relate to the expressions by means of which a writer guides a reader through the text (e.g. *As can be seen in Figure x*) (Hyland, 2005a).

example, a comment adjunct *undoubtedlly* in the following example performs a textual function pointing to the preceding segment of the text but at the same time it signals the writer's attitude to the content.

58. Undoubtedly, there are limitations to the findings of this thesis.[60]

Hyland maintains that the devices signaling textual metadiscourse are basically writers' choices to make readers interpret the meaning in the intended way which in turn makes the textual metadiscourse interpersonal too. Hyland's (2005a) model of academic metadiscourse is functionally-based and it draws to a large extent on the distinction between **interactive** and **interactional dimension** of interaction. Interactive dimension deals with those aspects of written texts which concern the organization of the discourse with an ultimate aim of producing a text which a reader will find coherent, meaningful, and persuasive. Some of these are, for example, **transition markers** which signal different types of logical connections between ideas (e.g. *in addition, therefore*).

On the other hand, the interactional dimension concerns the way writers evaluate or comment on their messages, engaging the readers to become implicit participants in the unfolding text. **Hedges**, which indicate the level of certainty writers wish to attribute to their claims signaling that the claims are to be taken as opinions rather than facts, clearly belong to the interactional dimension of metadiscourse. Other devices include, for example, **boosters** which highlight the writers' confidence in the claims they make (e.g. *certainly, undoubtedly*); **self mention**, referring to the explicit authorial presence (e.g. personal and possessive pronouns, such as *I, our*) and indicating the level of writers' authority they wish to project into the text, etc.

[60] The example was taken from Hyland and Tse (2004, p. 163).

It is important to point out that being a part of a more encompassing study on reflexivity in language, metadiscourse is indeed a fuzzy concept to deal with and hardly possible to fully account for (Hyland, 2005a). Like other related categories of the evaluative language use, such as hedging and stance, there is a wide understanding that metadiscourse is difficult if not impossible to delineate in any finite manner (Hyland, 2005a). One reason for this is undoubtedly the possibly infinite number of ways, attitudes or affects that can be expressed in language, which make it a potentially open-ended category (Hyland, 2005a). An additional problem is the polyfunctionality of the items commonly associated with metadiscourse. In other words, the devices perform certain metadiscoursal functions only by virtue of a context and not merely a form which in turn makes metadiscourse not only a linguistic but also a rhetorical concept inseparable of a situational context in which it is used (Hyland, 2005a).

2.3.6 Hedges as expressions of stance in academic writing. The markers of epistemic modality play one of the central roles in conveying stance which is yet another dimension along which a broad concept of evaluation in academic discourse has been studied (Biber et al., 1999; Conrad & Biber, 2000; Hyland, 2005b; Biber, 2006a; Wharton, 2012; Pho, 2013). Broadly speaking, stance is an umbrella term which encompasses different devices writers use to intrude into the text and convey their attitudes towards the content and the readers (Wharton, 2012).

Wharton (2012) distinguishes between three stance domains: the epistemic domain, which is concerned with the notions such as truth and certainty; the attitudinal domain, encompassing value judgments or emotional attitudes; and the dialogic space, which concerns inclusion of readers into the text. The epistemic domain concerns writer's hedged

or boosted stances towards assertions. The hedged stances, which are mainly realized by means of epistemic modality devices, are used to signal the writer's hesitance towards a categorical claim. Thus, hedged stances overlap with Hyland's (1998) category of reliability hedges in his polypragmatic model of hedges. For Hyland (2005b), stance is characterized in terms of the features which signal how writers present themselves in the texts and how they express their assessments, commitment or attitudes towards claims. Against this background, stance bears resemblance to the interactional dimension of the previously discussed model of academic metadiscourse. Stance comprises three broad components which can be realized by means of different devices. These include *evidentiality* which marks a varying degree of writer's commitment to the proposition and is chiefly realized by means of hedges or boosters; *affect* which refers to conveying emotional rather than epistemic attitudes and is realized by attitude markers; and *presence*, which denotes a writer's explicit intrusion into the text by means of self-mentions, i.e. personal and possessive pronouns (Hyland, 2005b).

It should be noted, however, that **stance** features represent one of the two dimensions in Hyland's (2005b) model of academic interaction. The other concerns **engagement**, which subsumes a range of resources writers use to recognize the presence of readers and direct their attention to a desired interpretation of their intentions. These include, for example, reader pronouns, such as inclusive *we*, which explicitly includes readers into the text and signal a strong bond between them and a writer in sharing similar assumptions, understandings, etc. (Hyland, 2005b).[61]

As Hyland (2005b) notes, both stance and engagement are two sides of the same coin since they contribute to the conceptualization of academic writing as interactive and

[61] The other devices include personal asides (including writer's comments which interrupt the argument); directives (mainly manifested through imperatives, e.g. *see, please note*, etc.); questions, and appeals to shared knowledge (Hyland, 2005b).

dialogic, signaling different ways how writers position themselves towards their claims, build argumentation, but also engage with readers in the communal process of constructing knowledge. It is important to note that the results of corpus analysis of stance and engagement features in research articles across eight academic disciplines (Hyland, 2005b) showed the saliency of stance features as compared to engagement markers, suggesting the centrality of signaling the writer's perspective in the academic text. Among stance features, hedges are most frequently employed, which once again, supports the importance writers place on expressing caution and tentativeness in presenting their claims. This is particularly salient in 'soft' disciplines (e.g. philosophy, applied linguistics) in which hedges are used approximately twice as much as in 'hard' disciplines (e.g. mechanical or electrical engineering). Generally speaking, this supports the underlying idea of the disciplinary-based research on evaluation in academic writing which points to the fact that writing conventions are to a considerable extent disciplinary-specific (Hyland & Tse, 2004; Hyland, 2005a, 2005b).

Among the most cited models of linguistic marking of stance in general, including academic English, was provided by the American linguist Douglas Biber and his associates (Biber et al, 1999; Biber, 2006a). Their linguistic analysis of multi-million corpora illuminated how a broad notion of stance is exploited across a range of written (e.g. university genres, research articles, etc.) and spoken academic registers (e.g. office hours, class sessions, etc.). For Biber et al. (1999, p. 966) *stance* is a cover term for "personal feelings, attitudes, value judgments, or assessments." Under this account, three dimensions of stance are distinguished: epistemic stance, attitudinal stance (signaling personal feelings or emotions, such as *amazingly, sadly, I wish...*), and style stance (referring to the comments on the communication, such as *to tell you the truth*).

Epistemic stance is a broad category signaling the speaker's comments on the status of information in a proposition (Biber et al., 1999). It subsumes notions such as marking of certainty or doubt, and as such overlaps with hedges and boosters as the two components of Hyland's model of stance. However, it is broader in scope, encompassing also markers of actuality (e.g. *in fact*), a degree of precision (e.g. *might, seem*), a source of (e.g. *according to*) and a perspective of the information (e.g. *under that view*) (Biber et al., 1999). For example, in sentence (59) the underlined adverb indicates the writer's doubt with respect to the proposition, while in sentence (60) the adverbial marks the perspective from which the proposition might be regarded as true.

59. *"Perhaps their probosces are not long enough to reach the most succulent parts..."* (Biber et al., 1999, p. 870)

60. *"From the interactional perspective outlined above*, this is what would be expected." (Biber et al., 1999, p. 973)

Being a part of the Longman Grammar of Spoken and Written English (1999), the main value of the proposed model is that it provides a systematic account of the grammatical features of stance markers as well as their distribution across different registers, including academic prose. These grammatical categories are discussed further below.

2.3.7 Epistemic modality markers as linguistic realizations of hedging and stance. Throughout the preceding discussion it has been repeatedly shown that hedging is quite an elusive category which does not lend itself to precise defining criteria. A wide scope of the notions subsumed under its label, from politeness, indirectness, vagueness, etc, has resulted in rather open-ended lists of possible lexico-grammatical items performing hedging functions, ranging from modal verbs (e.g. *may, might*); approximators relating to

quantity (e.g. *about, somewhat*); time (e.g. *usually, sometimes*); adjectives, adverbs, and nouns expressing epistemic possibility or probability (e.g. *possible, possibly, possibility*), expressions marking personal opinions (e.g. *in my view*), etc. As a result, the taxonomies of hedges used in research on academic writing vary greatly in size, which, among others, poses considerable constraints in comparing research findings. As a way of illustration, Hyland's (2004) list contains 47 items, while the taxonomy of hedges in his model of metadiscourse (Hyland, 2005a) includes some 80 items. By contrast, Vartalla's (2001) taxonomy amounts to 236 hedges.

Despite the discrepancies in the size and sub-divisions of the hedging taxonomies, the core grammatical categories of epistemic modality seem to constitute a rather constant strand of hedging devices in academic writing. Based on the comparison of a range of taxonomies used in research on scientific hedging (Salager-Meyer, 1994; Hyland, 1998; Vihla, 1999; Vartalla, 2001; Martín-Martín, 2008; Hu & Cao, 2011), the grammatical categories of epistemic modality listed below may be considered as central in realizing the hedging function in academic writing. Given that the proposed categories greatly overlap with the lexico-grammatical features of marking epistemic stance in Biber et al.'s (1999) model of stance, these have also been added here, resulting in the following:[62]

1) modal auxiliaries: *It may be that…*

2) modal adverbs: *It is probably …*

3) modal adjectives: *It is possible that/ A possible cause of …*

4) modal nouns: *There is a possibility that…*

5) epistemic verbs: *We assume that…/It is assumed that…/X assumes that*

[62] For the reasons of convenience, each category is exemplified by an abbreviated example extracted from the present corpus, while the full forms of the sentences are given in Section 3.1.2.1.1.

At this point, it should be noted that the aim of the present section is to outline and exemplify the major grammatical categories commonly subsumed under the notion of hedging and epistemic stance without referring to the criteria for the selection of the individual items included in each category, the overlaps with other categories such as evidentiality, etc. As a way of illustration, the use of the lexical verbs such as *X assumes that…* where the source of the judgment is attributed to the Other has been treated rather differently in research on hedging and stance. Some scholars deny these instances the hedging status (Crompton, 1997), some treat them as hedges or epistemic stance markers (Hyland, 1998; Biber et al. 1999; Vartalla, 2001; Vold, 2006b; Biber, 2006a), yet others categorize them as evidentials (Hyland, 2005a). These issues, however, are tackled in more detail in the outline of the methodological framework of the present study.

2.3.8 Previous research on epistemic modality in research articles. Accounting for the empirical research on the use of epistemic modality markers in research article writing is far from a straightforward task for at least two reasons. First, the use of epistemic devices is associated with a range of different models of academic interaction so the outline of the empirical studies inevitably has to consider different perspectives. Second, even within the same models, studies often follow different methodological approaches which often constraints the integration of research findings. A lack of uniform analytical methods is generally considered to be one of the major drawbacks of research into academic discourse and research on the use of epistemic devices in academic writing is not an exception in that respect (Sanderson, 2008).

The aim of the following discussion is to provide a general overview of the major research strands, supported by the outline of the selected empirical studies, the aspects of

which are deemed to be related to the purposes of the present study (Figure 2). As the studies vary in research focus to a considerable extent, no attempt is made here to discuss research designs and the research findings in great detail. Where relevant, reference to these is made in the discussion of the corpus findings.

As shown in Figure 2, at the most general level, research into epistemic modality in academic writing may be followed along two major strands. The first concerns large-scale accounts of grammatical patterns in four major registers in English, including academic language (Biber et al., 1999; Conrad & Biber, 2000; Biber, 2006a). These accounts provide valuable insights into the general patterns of the use of grammatical features, such as stance markers, as well as their most frequent exponents in English academic prose. For example, investigating stance adverbials across three registers (i.e. conversation, academic prose and news), Conrad and Biber (2000) show that epistemic stance adverbials (e.g. *perhaps, probably, undoubtedly*) are significantly more frequently used than style and attitude adverbials in all three registers. When it comes to the distribution of the specific types of epistemic stance adverbials in academic prose, findings point to the highest frequency of the adverbials used to express the writers' varying degrees of doubt and limitation with respect to the proposition (e.g. *perhaps*, *probably*). This signals that academic prose puts a great emphasis on flagging propositions for their degrees of doubt or certainty (Conrad & Biber, 2000). Viewed from the context of the rhetorically-oriented approaches to the use of epistemic modality in academic writing, the obtained findings may be associated with the centrality of hedging in academic writing.

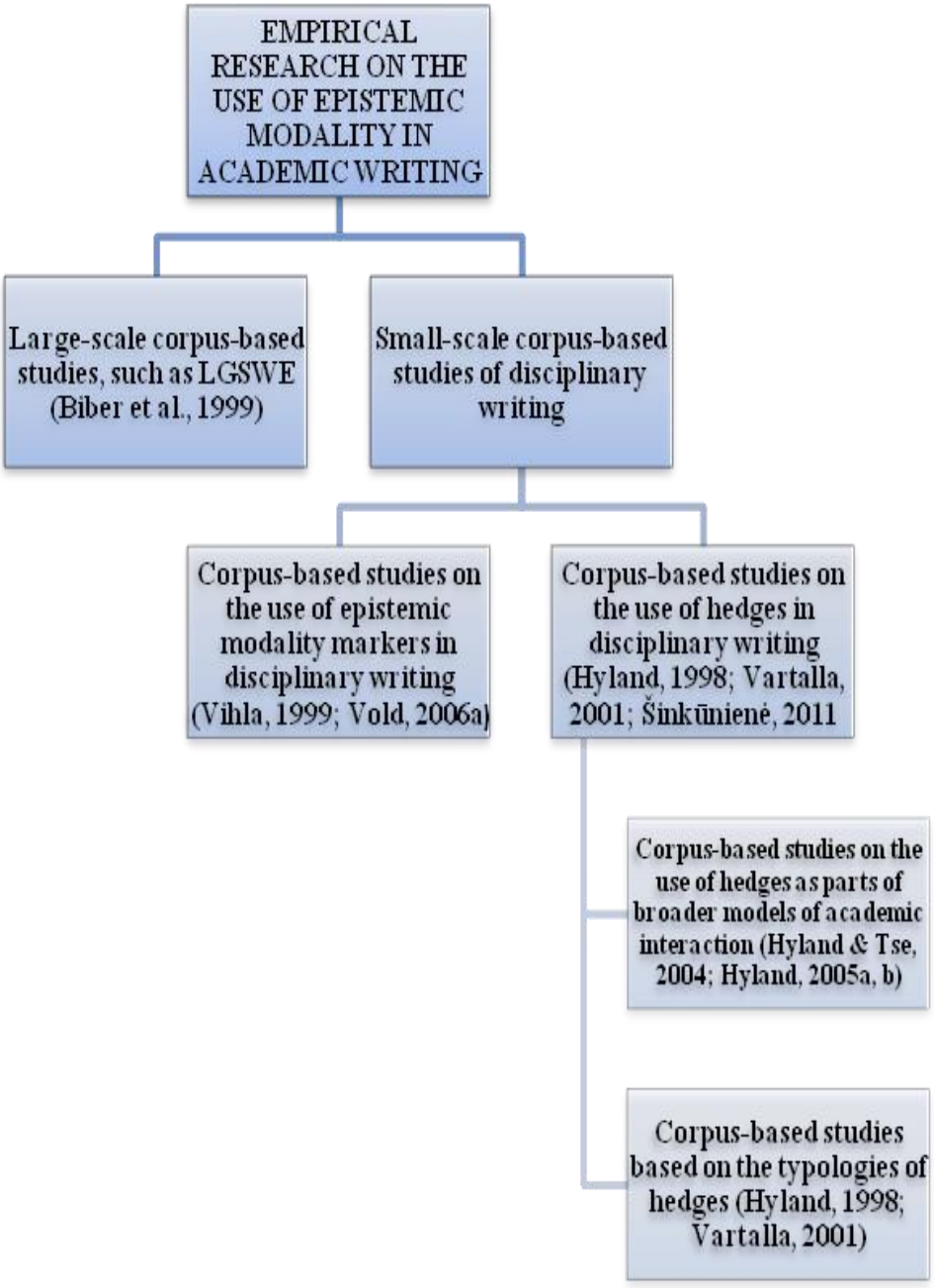

Figure 2. An outline of the types of empirical research on the use of epistemic modality devices in research article writing

The other strand of research is narrower in scope and concerns smaller-scale, genre-based studies which aim to explore the types, frequency, and pragmatic functions of epistemic devices with respect to different variables, such as academic discipline, language, gender, etc. Generally, these studies may be related to two major research domains. The first concerns those in which epistemic modality is explored in its own right yet brought into

relation with the overall functions of hedging (Vihla, 1999; Vold, 2006a, 2006b). The second comprises the studies in which the use of epistemic markers is accounted for as a part of an overarching category of hedging (Hyland, 1998; Vartalla, 2001).

As previously noted, within the context of academic discourse, studies on the pragmatics of epistemic modality in its own right are rather limited in number and sometimes based on the methodologies not directly comparable to the one proposed above. For example, Yang, Zheng and Ge's (2015) study on epistemic modality markers in research articles in a single discipline follows the systemic functional linguistic approach which classifies epistemic devices along dimensions different from those established in the semantic approach adopted here. By contrast, Vold (2006a) adopts a polysemous approach to epistemic modality and explores the pragmatic functions of epistemic modality markers in the corpus of 40 research articles in linguistics and medicine across three languages.[63] Her analysis is based on the most frequent epistemic markers found in the exploratory corpus, including the following: *may, might, could, possible, probably, perhaps, indicate, suggest, assume, seem, appear*. The findings show that despite some disciplinary preferences in the use of the individual markers, there were no significant differences in the use of the markers between the two disciplines. With respect to the frequency of the individual epistemic markers, the findings point to the saliency of the modal *may* in both corpora, while the verbs *seem, appear, and assume* ranked higher in the linguistics corpus as compared to medicine.

Vihla (1999) explores the use of modality devices in general in a range of different medical genres, including the research article. His study is based on the taxonomy of modal devices which are divided into three categories: possibility, likelihood/certainty and prescriptive modal expressions. The category of possibility expressions encompasses a small

[63] The results of the cross-linguistic variations in the use of epistemic modality markers in Vold's (2006a) and other studies in the present outline are discussed in the next section.

range of devices, including *may, might, maybe, perhaps, possibly, it is possible that, possibility that*. The category of epistemic certainty/likelihood comprises expressions such as *appear, seem, probably, be/seem/appear/likely that,* etc. Findings show a higher frequency of possibility expressions as compared to those expressing certainty/likelihood, which signals a more salient role of hedged rather than boosted statements in research article writing (Hyland, 2005b). At the level of the individual markers, Vihla's findings point to the saliency of the modal *may*, followed by *might*, while the other epistemic devices were used considerably less frequently.

With respect to the empirical studies on the use of hedges and their linguistic realizations in research articles, two strands of research may be distinguished. The first comprises the studies in which the use of hedges is explored within broader models of academic interaction, such as previously discussed metadiscourse or stance and engagement models (Hyland, 2005a, 2005b; Hu & Cao, 2011). In those accounts, hedges are not taxonomized into distinct categories but rather treated as a single, uniform category, comprising of epistemic devices, such as modals, epistemic adverbs, adjectives, etc. but also other devices, commonly labelled as *approximators* (e.g. *about, somewhat*), etc. Conflating a range of devices whose hedging status is generally well-established into a single category is apparently a more convenient approach to working on larger corpora and exploring, for example, the cross-disciplinary practices with respect to the use of hedges (but also other components of the cited models). However, such generic approaches to hedges in academic writing may blur a distinctive role of specific grammatical categories performing hedging functions which are consequently left unaccounted for.

A case in point is Hyland's study (2005b) which reports on a higher proportion of hedges in research articles in soft disciplines, such as Marketing, Philosophy, and Applied Linguistics, as compared to their use in hard disciplines, like Physics, Mechanical

engineering, etc. On a more general note, the obtained distribution of hedges reflects the nature of the soft vs. hard disciplines dichotomy. Dealing with human subjects and variables which are less certain than those in the hard sciences, writers in the more discursive soft disciplines need to express more caution and tentativeness in presenting their arguments, which in turn accounts for a denser use of hedges. By contrast, the use of hedges in the hard sciences is less prominent as the construction of knowledge is based on harder empirical data and more reliable quantitative research methodology (Hyland & Tse, 2004).

In addition to the studies in which the distinctive linguistic devices and their functions are rather conflated, studies based on the taxonomies of hedges attempt to provide a more fine-grained account on the frequencies and functions of the particular types of hedges in disciplinary writing. However, the taxonomies of hedging devices used in those studies are often based on the author's subjective criteria, which pose constraints on the comparison of the research results as well as the replication of the studies (Sanderson, 2008). For example, Salager-Meyer (1994) explores the use of hedging devices in two medical genres: research articles and case reports. The study is based on the taxonomy consisting of rather heterogeneous categories including *shields*, a common term encompassing an array of devices, such as epistemic modals, epistemic adjectives and epistemic verbs referring to speculations or hypotheses (e.g. *suggest* and *speculate*); approximators (e.g. *about, around*), expressions which reduce the writer's personal involvement (e.g. *I believe, In my view*), the writer's comments in terms of emotionally-charged intensifiers (e.g. *of particular importance*) and compound hedges which consist of a string of hedging devices (e.g. *it may be suggested*). As for the frequency of individual categories, *shields* constituted the most frequently employed category of hedges, which points to the saliency of the use of epistemic devices in expressing caution and reducing the writers' commitment to their claims. With respect to the distribution of hedges across the

IMRAD structure of research articles, the overall findings point to the highest frequency of hedges in the Discussion section, and the lowest in the Method section, while their frequency was relatively similar in the remaining two sections. Such a distribution of the use of hedges complies with the overall rhetorical functions of the respective RA sections. In other words, the low frequency of hedges in the Method section may be accounted for by the fact that this section deals with the outline of the methodological procedures and data collection where the use of cautious language is not particularly relevant. These rhetorical purposes strikingly contrast with those in the Discussion section where writers evaluate findings, draw conclusions, account for alternative interpretations, etc. which consequently leads to a more frequent use hedged statements.

Hyland's (1998) study on the use of lexical hedges in biology research articles adopts a different taxonomy which is based on the grammatical categories of hedging devices consisting of the following: modal verbs, epistemic verbs, epistemic adverbs, adjectives, and nouns. The findings show the highest frequency of epistemic verbs, followed by adverbs, adjectives, and modals, and a negligible frequency of modal nouns. With respect to the distribution across the RA rhetorical sections, the overall findings follow the expected practice, with the highest density of hedges recorded in the Discussion, the relatively same frequencies in the Introduction and Results and a negligible use of hedges in the Method section. At the level of the individual markers, *may* was the most frequently employed modal in the category of modal verbs. Among the lexical verbs, the most frequent were *indicate* and *suggest*, while the adjectives *likely* and *possible* were the most frequently employed epistemic adjectives.

Vartalla's (2001) study explores the use of hedging devices across research articles and popular science articles in the three disciplines (economics, medicine, and technology). Though the taxonomy is based on further categories such as questions, clausal elements, and

others, the core hedging categories are identical to Hyland's taxonomy of the grammatical categories, yet not comparable. Namely, unlike Vartalla who provides a complete list of the items used in the corpus analysis, Hyland (1998) gives the overall raw and relative frequencies of the overall items included in each grammatical category of hedges but lists only the most frequent ones for each category. In Vartalla's (2001) taxonomy, each grammatical category is further divided into subcategories depending on the common semantic features of the devices included in the analysis. For example, the category of full lexical verbs includes nonfactive reporting verbs (e.g. *imply, suggest*), tentative cognition verbs (e.g. *assume, believe*), and tentative linking verbs (e.g. *seem, appear*).

With respect to the disciplinary variations in the use of hedges, the findings show the highest frequency of hedges in economics, followed by medicine and technology. Generally, this may be accounted for by the fact that economics is a social science where theoretical uncertainties are more prominent as compared to medicine or technology whose methodologies and objectives are more rigorous (Vartalla, 2001). When it comes to the frequency of the grammatical categories of hedges, the overall findings point to the highest distribution of lexical verbs (in particular tentative cognition verbs), while adjectives ranked the lowest. As previously noted, Vartalla's taxonomy consists of 236 hedges subdivided into 14 categories, the distributions of which as well as those of the salient individual devices are too detailed to be accounted for here. Reference to the selective epistemic devices as well as their frequencies is made in the subsequent sections of the present study.

In sum, the preceding section has aimed to outline the major research directions with respect to the use of epistemic devices in research article writing as well as the selected empirical studies. The findings of those studies can tell us something about the rhetorical practices in particular disciplines, but, as already noted, due to the versatility of approaches and methodological designs the comparison and integration of the final results is hardly

possible. One of the most critical points in most previously outlined methodological frameworks is related to the criteria used in selecting the units of analysis. However, this issue is discussed in more detail in the outline of the approach adopted in the present study. The final issue left to be discussed with respect to the present research concerns the language variable, i.e. a cross-linguistic perspective on the use of epistemic modality markers in research article writing.

2.3.9 A cross-cultural perspective on the pragmatics of epistemic modality in academic discourse. The question of the role of culture in academic writing has attracted a considerable research interest in academic discourse analysis and the various features of a broad concept of evaluation have not been an exception in that respect. As Mauranen (1993) observes, while science or rather a scientific way of thinking is a universal phenomenon, academic writing is a cultural product, realized in a particular cultural context and shaped to a considerable extent by the cultural specifics. If we think about academic writing in terms of the academic genres as its representatives, we may in broad strokes argue that they exhibit both universally generic and culturally-specific features. Taking an example of an original research article in social sciences such as psychology, a conventionalized IMRAD format could be taken as its generic structural feature, which, however, does not suggest that there are no variations in this basic structure or that it is the exclusive format in which research articles may appear (Sanderson, 2008).

Most generally, while the formal surface structure of the disciplinary academic genres such as a research article could be considered as culturally independent, their rhetorical conventions seem to be more susceptible to the cultural variations (Mauranen, 1993; Sanderson, 2008). As has been previously demonstrated, the way writers construct

their argumentation, adopt stance, etc. is to a large extent constrained by the nature of the particular disciplines. However, beyond these disciplinary constraints, the way the rhetorical means are manifested as well as the degree to which they are employed in the actual instances of academic writing may be to a varying extent constrained by the culturally-specific rhetorical conventions (Mauranen, 1993). As a way of illustration, Vassileva (1998) compared the distinctive forms of authorial presence (the "I" vs. "We" perspective) in linguistics articles across five languages (English, German, French, Bulgarian, and Russian). One of the author's findings was that the use of the 1st Person Sg or Pl personal pronouns was considerably higher in the disciplinary writing in English as compared to the Slavic languages, in which impersonal constructions prevail. More specifically, the findings demonstrate that English authors tended to use the "I" perspective in presenting their research objectives in the introductory parts of their papers, showing thus a strong commitment to their study and asserting its importance (e.g. *I will show…*). By contrast, Slavic authors preferred to downplay their presence when introducing their research, resorting to the passive-like or other impersonal constructions (e.g. *XY are analyzed…*). In addition, even when personal pronouns were used, a Slavic author tended to favor the "We" over the "I" perspective, though expressing a strictly individual view (e.g. *According to us…*). For Vassileva (p. 176), such instances which show "a polar difference between the real referent of the pronoun and the linguistic expression" may be taken as extreme cases of the depersonalized character of academic writing in the respective Slavic languages.

The level of personalization in distinctive writing styles, such as the above quoted, cannot be accounted for in terms of the differences in linguistic systems but rather in terms of the rhetorical conventions specific to particular national cultures (Sanderson, 2008). These in turn reflect wider sociocultural contexts in which academic writing is embedded, which in terms of the languages cited may be, among others, related to the distinction

between individualistic vs. collectivist cultures, as discussed by Clyne (as cited in Vassileva, 1998). Vassileva suggests that given their long-standing communist political order, Bulgarian and Russian cultures tend to favor the collective approach in academic writing which is generally reflected in a low frequency of personal reference forms. This seems to lend support to the observation that, "cultural factors help shape our background understandings, or schema knowledge, and are likely to have a considerable impact on what we write and how we organize what we write, and our responses to different communicative contexts" (Hyland, 2005a, p. 114).

2.3.9.1 Intercultural rhetoric. In the context of academic discourse, cross-cultural research on various aspects of academic writing has been largely associated with the field of **intercultural rhetoric**. Connor and Rozycki (2013, p. 427) define intercultural rhetoric as "the study of written discourse between and among individuals with different cultural backgrounds." In simple terms, this research area sets out to explore how writers in language A use the linguistic resources to interact with the text and the readership as compared to writers in language B. In addition, it seeks to examine how the preferred rhetorical conventions in language A, which are dependent on various sociocultural factors, may affect writing in language B, which possibly exhibits some different rhetorical conventions. Needless to say, in cross-cultural research on academic discourse language B has been predominantly English which is, despite some criticisms directed at English ethnocentricism and hegemony (Spack, 1997), understandable due to its status as a lingua franca of scientific research networking, scientific publication, and commerce (Pérez-Llantada, 2012; Connor & Rozycki, 2013).

Granted this broad characterization, it is not surprising that research in intercultural rhetoric and its findings are closely connected with their application in the teaching context, in particular in the EAP domain. The empirical findings of those studies keep on informing EAP practitioners worldwide about the preferred rhetorical conventions between academic English and other languages and help them and their L2 students in raising awareness of primarily cross-cultural differences in the academic writing style, contributing thus to the development of L2 academic literacy (Li, 2008).

With respect to the empirical research in the field of intercultural rhetoric, two major domains of studies can be distinguished. One relates to the studies examining interferences of L1 rhetorical conventions with those in English (Mauranen, 1993; Vassileva, 2001; Hinkel, 2004). This strand of research is based on the premise that due to the variations in the use of the same feature between L1 and L2 writing (e.g. metadiscourse), L2 writers may leave traces of the L1 rhetorical conventions in their English academic texts and thus violate the discourse norms of the targeted English language (Hyland, 2005a; Sanderson, 2008).

For instance, as a part of a larger project examining the preferred rhetorical conventions in the Finnish and English academic texts, Mauranen (1993) examined two comparable academic articles in the field of economics written by an Anglo-American scholar and a Finnish scholar writing in English. Her study aimed to explore the variations in the use of different categories of textual metadiscourse (e.g. transition expressions connecting the propositions; expressions summarizing the preceding content or announcing the one that follows) between the authors of distinct cultural backgrounds. The findings showed that the English author used considerably more metatextual devices (54%) as compared to the Finnish (22%). More specifically, the English writer intruded in a text more often by summarizing the points before reaching a conclusion, providing comments on the claims made, etc., thus showing more consideration for the reader. According to Mauranen

(1993), such strategies may reflect a more writer-responsible writing style in which a writer assumes responsibility to navigate the reader through the text and guide his or her interpretation of the text. By contrast, a considerably lower rate of the metatextual devices used by the Finnish writer may be a reflection of a reader-responsible style which places more demands on readers as they need to engage more actively in a text and infer the writer's main points by themselves. In addition, both texts reflected different persuasive strategies. While the English author was more explicit in asserting the main point early in the text, the Finnish text was more implicit, leaving the main point up to the end. The author concluded that the observed differences stem from different notions of politeness in the respective cultures. Thus, conforming to the conventions of the Anglo-American style which is characterized as marketing-oriented or rather didactic, a writer is expected to guide the reader through the text and thus save his or her time and effort. In contrast, the more poetic Finnish style is characterized as being more implicit, whereby a writer avoids being too intrusive and patronizing to the reader. This may be taken as a sign of respect to the reader's individual intellectual skills in the interpretation of the textual message. However, Mauranen observes that the same implicit strategy may be perceived as a writer's arrogant attitude towards readers in a sense that he or she does not bother to assist a reader in understanding the gist of the text. Overall, the above cited study illustrates how non-native writers may transfer the L1 rhetorical conventions when writing their academic texts in English, which for an English reader familiar with different rhetorical conventions may be conceived as rhetorically inappropriate and possibly result in a negative evaluation (Hyland, 2005a). Therefore, the awareness of the rhetorical variations between L1 and L2 may be particularly relevant for non-native English writers from minority cultures when attempting to publish their articles in English (Mauranen, 1993; Sanderson, 2008).

The other strand of research refers to cross-cultural studies which aim to explore the same concept across disciplinary writing in distinctive cultures, most notably in comparison to English (Hyland, 2005a). Thus, Crismore et al. (1993) explore the use of metadiscourse in Finnish and US. students' writings; Koutsantoni (2006) investigates the level of certainty and commitment that Greek and English RA writers attach to their claims; Martín-Martín (2003) compares the rhetorical structure of abstracts in research articles in Spanish and English; Hirano (2009) studies the variatians in the rhetorical structure of introductions in research articles written by Brazilian Portuguese and English writers; Molino (2010) studies personal and impersonal authorial references in English and Italian RA writing, etc. As the overall aim of the present study is related particularly to this research domain, the section which follows outlines some empirical findings with a particular focus on the variations in the use of hedging devices in the cross-cultural disciplinary writing.

2.3.9.2 Some empirical findings of cross-cultural research on hedges in academic writing. Previous research has pointed out that different cultures exhibit specific rhetorical preferences in constructing academic argumentation, including the use of hedging strategies (Hyland, 2005a). One of the common findings is that academic English is characterized by a greater tendency to express the writer's caution and a reduced degree of commitment in presenting scientific claims as compared to other languages (Vassileva, 2001; Hyland, 2005a; Vold, 2006a; Hu & Cao, 2011; Šinkūnienė, 2011).

For instance, Martín-Martín (2008) explored the use of hedges in mitigating writers' claims in research articles in psychology in English and Spanish. The author classified different hedging devices according to the distinctive types of strategies writers employ to convey their stance. Three fundamental strategies were distinguished: Strategy of

Indetermination, Subjectivisation, and Depersonalization. The former, realized by a range of the epistemic modal devices and approximators, is concerned with reducing explicitness of a proposition as well as with conveying vagueness, fuzziness, etc. The strategy of Subjectivisation is realized by the use of the expressions signaling a personal or subjective opinion (e.g. *in my view*) or those that intensify the meaning of a proposition (e.g. *particularly important*). The Depersonalization strategy aims to conceal writer's presence in the text and is mainly realized by impersonal and passive constructions (e.g. *it is suggested*). Overall, findings pointed to a similar distribution of the hedging strategies in both corpora, though it was slightly higher in the English corpus. In both corpora, the highest frequency of hedges was recorded in the Introduction and Discussion sections, which complies with the overall rhetorical functions of the two sections. With respect to the types of hedges, both English and Spanish writers preferred various forms of Depersonalization strategies by means of which writers distance themselves from the claims and thus reduce responsibility for them. The greatest discrepancy between the two corpora was reflected in the use of Indetermination strategies, with the highest frequency recorded in the English corpus. In other words, English writers used more frequently the epistemic devices and approximators to mitigate the strength of their claims and thus protect themselves from the risks of overstatements. This rhetorical strategy seemed to be less relevant for Spanish writers. According to the author, the use of the epistemic modality markers in the Spanish academic writing style is probably not recognized as a conventionalized form of mitigating the force of the claims as in English. Alternatively, a more favored Depersonalization strategy seems to be sufficient enough for hedging one's claims in a small academic community such as the Spanish in which peer rejection is less prominent as compared to the more competitive Anglo-American community (Martín-Martín, 2008).

Vold (2006a) investigated the use of epistemic modality markers performing a hedging function in the corpus of research articles in linguistics and medicine written in English, French and Norwegian. Overall, the research findings showed that English writers used hedges the most, though their frequency was quite close to the frequency of hedges used by Norwegian writers. In addition, both English and Norwegian writers used considerably more hedges than their French colleagues. According to the author, apart from the fact that English and Norwegian are Germanic languages, exhibiting thus more similarity in the choice of linguistic strategies, there is also a similarity between the two academic cultures, with Norwegian being significantly influenced by the Anglo-Saxon culture. Though the author did not discuss it at length, a lower frequency of hedges recorded in French articles might reflect the preferred rhetorical practices of the French academic writing style, and a tendency of French writers to display more assertiveness, authority, and certainty in constructing knowledge claims, as reported in previous research (e.g. Salager-Meyer, Angeles Alcaraz Ariza, & Zambrano 2003).

Vassilieva (2001) explored the use of the commitment and detachment strategies i.e. hedging and boosting in research articles in linguistics written by English, Bulgarian, and Bulgarian writers writing in English. Her findings demonstrate that compared to Bulgarian writers, English writers employed more hedges in constructing tentative claims, while Bulgarian writers writing in English seemed to construct their knowledge claims with the highest degree of certainty as compared to other groups of writers under study. Concerning the latter finding, Vassileva suggested that it might reflect the considerable lack of pragmatic competence on the part of Bulgarian writers when using hedges in academic English. In addition, it might also be a sign of the willingness of Bulgarian writers to preserve their cultural preferences while writing in a foreign language. In accounting for the cross-cultural differences in the use of strategies under study, Vassileva pointed, among

others, to the different educational systems, with the Anglo-American paying significantly more attention to the institutionalized teaching of writing skills. In the Bulgarian system, learning how to write relies more on reproductive skills, whereby more importance is given to the content rather than the form of the texts. In other words, Bulgarian academic writers rely more on intertextuality or previously written texts with certain well-established standards and follow this cognitive schema when writing in English. According to Vassileva, this may result in attaching more certainty to the claims which English readers may find overly assertive.

It should be pointed out that the preceding account of the cross-cultural research has not aimed to be comprehensive but only to present the frameworks and the general findings of a selected set of studies. Overall, the findings of the above quoted studies lend support to the view that the writers' tendency to attach higher or lower degree of commitment to their claims can be regarded as a sign of conforming to the culturally-preferred rhetorical practices of academic writing which in turn reflect wider cultural characteristics of the respective communities. However, as often suggested, the role of culture is not the only factor influencing the choice of the rhetorical strategies in academic writing (Hyland, 2005a; Sanderson, 2008). In addition to the already discussed disciplinary variations, other variables may refer to a writer's academic position, level of expertise in a subject matter, age, gender, etc. (Hyland, 2005a; Sanderson, 2008). In other words, caution is needed when it comes to the implications on the cross-cultural impacts on the preferred rhetorical patterns in disciplinary academic writing. As Sanderson (2008) suggests, "culture does not operate in a deterministic fashion, but rather influences-whether consciously or subconsciously it is difficult to determine-the choices made by individual authors" (p. 32-33). However, the constraints of the cross-cultural studies are discussed in more detail in the General discussion of the findings obtained in the present study.

2.3.10 Summary. The purpose of the preceding section has been to account for the role of epistemic modality against the broad concept of evaluation in academic writing, in particular the research article as its most salient genre. Evaluation is here understood as a broad term for all the interactive features of academic writing that run against the traditional conceptualization of academic discourse as an impersonal, faceless report of the scientific truth (Hyland, 2005a). As has been demonstrated, a range of evaluative features, such as hedging, boosting, attitudinal markers and various notions of stance lend support to the characterization of academic writing as a socially situated process in which scientific knowledge is not conceptualized as given but rather as constructed through the negotiation between writers and readers (Hyland, 2004; Sanderson, 2008).

The role of epistemic modality in academic genres is mostly associated with the use of hedging strategies as well as with conveying epistemic stance. While hedges, among others, enable writers to weigh up a degree of commitment to the claims and therefore protect themselves against potential criticism, epistemic stance is a broad notion encompassing a wide range of devices that writers use to comment on the certainty, actuality, limitation and source of information in a proposition (Biber et al., 1999; Hyland, 2005b). Epistemic modality markers, in particular modal verbs, adverbs, adjectives, etc., have been established as the primary linguistic means in realizing both hedges as well as epistemic stance markers.

As shown in previous research, the use of hedges as one of the components of interactional features of an academic text conforms to the discoursal practices of the distinctive disciplinary communities, and is therefore susceptible to disciplinary variations (Hyland, 2005b). While more interpretative ‘soft’ disciplines generally show a greater tendency to use various stance devices, empirically more rigorous ‘hard’ disciplines tend to employ them to a considerably lesser extent. In addition to discipline, the way writers

convey stance in their writings is greatly influenced by their cultural background so accounting for the cross-cultural variations in the rhetorical conventions of the academic writing implies tapping into the wider sociocultural contexts of which it is but a part.

2.3.11 Towards the approach adopted in the present study. So far the present discussion has taken two major directions of accounting for epistemic modality as the primary focus of this study. The first direction dealt with the theoretical linguistic accounts of epistemic modality, in light of the traditional as well as the cognitive linguistic approaches. In line with the purpose of the present study, the discussion focused on the outline of the semantic properties of epistemic modality and its relations with other semantic domains of modality as well as with evidentiality. The second part focused on the role of epistemic modality in academic discourse as the primary focus of the present study. The use of epistemic modality markers was accounted for against some major models of academic interaction, in particular Hyland's (1998) polypragmatic model of scientific hedging, metadiscourse (Hyland, 2005a), and epistemic stance (Biber, 2006a). Though a more detailed account of the approach adopted in this study is outlined in the next chapter, at this point it is necessary to round off the preceding two chapters and in broad strokes lay out the general framework within which epistemic modality is explored here.

The present study explores the use of epistemic modality markers in a research article in psychology written in Croatian and English. Therefore, it may be characterized as a single-disciplinary, genre-based study which aims to explore cross-cultural variations in the frequency and therefore (non)salience of the selected epistemic markers in the two languages and consequently provide an insight into a particular aspect of the rhetorical preferences in cross-cultural academic writing.

With respect to the linguistic category of epistemic modality, the study broadly follows Nuyts' (2001) cognitive-pragmatic account according to which "epistemic modality concerns an estimation of the likelihood that (some aspect of) a certain state of affairs is/has been/will be true (or false) in the context of the possible world under consideration" (pp. 21-22). In addition, the pragmatic dimension of this account recognizes the specific communicative purpose epistemic markers perform in a particular discourse type. In the present study, the communicative purpose of the epistemic markers is primarily explored in light of the hedging functions but reference is also made to the notion of epistemic stance (Hyland, 1998; Biber et al., 1999). It is important to point out that the study does not explicitly adopt any of the well-established approaches or taxonomies of hedging in academic writing in its entirety, primarily due to their broad conceptualization of hedging[64] (Salager-Meyer, 1994, Hyland, 1998; Vartalla, 2001).

The present understanding of hedging, restricted to the account of the epistemic modal devices, is based on the broad notion that hedges are used to indicate "that a statement is based on the writer's plausible reasoning rather than certain knowledge, indicating the degree of confidence it is prudent to attribute to it" (Hyland, 2005a, p. 52). As the subsequent analysis shows, the current study adopts the position that hedges do not only concern a writer's explicitly subjective commitment to the propositional content but may also refer to the reports on shared assumptions which is in line with the distinction between the subjective vs. intersubjective dimension of epistemic modality, as discussed in Chapter 2 (Nuyts, 2001). These distinctions, however, are discussed in more detail in the account of the respective categories of epistemic devices in the analytical part of the study.

[64] As a way of illustration, Hyland's model encompasses both lexical and non-lexical hedges. The former includes not only the core epistemic devices but also a range of the non-epistemic devices, such as the adverbials hedging numerical data (e.g. *approximately, about, around*), which are not encompassed by the present account of epistemic modality.

3. Methodological framework

The methodological framework adopted in this study essentially follows the previously discussed theoretical background of socially situated academic writing which recognizes that academic texts are not only "sets of scholarly propositions", but rather forms of interactions between members of particular discourse communities (Hyland, 2004, p. 132). Such a conception of academic writing clearly calls for a more encompassing methodological framework which moves beyond the textual analysis and taps into the rhetorical practices of a particular disciplinary community as it is only by understanding these that the textual features under study may be properly understood and interpreted (Hyland, 1998; Connor, 2004; Connor & Moreno, 2005; Bhatia, 2014). A direct insight into disciplinary writing conventions can be best obtained from the informed members of an academic discipline so that involving subject specialists into the methodological design in any genre-based study on academic discourse may be considered as its indispensable part (Hyland, 2000; Connor, 2002). This in turn means that conducting research in the rhetorical practices of the particular academic disciplines requires adopting multiple methodologies, such as genre-based analysis, corpus linguistics and ethnographic methods, which all contribute in different ways to the questions research aims to address (Hyland, 1998; Connor, 2002; Connor & Moreno, 2005).

The present study largely follows Hyland's (2004) methodological framework for researching socially-situated academic texts, which recognizes three sources of obtaining and analyzing data. These involve gathering the textual data based on the textual analysis of the representative corpora of academic texts, data obtained through interviews with subject specialists concerning their perspectives on writing practices in the respective disciplines, and subject-specialists' self-reports which focus on the use of textual features in their actual pieces of writing. The present study combined the latter two approaches so the

methodological framework adopted here is based on the textual and extra-textual sources of data.

3.1 Textual sources of data

Given that the current study takes a cross-cultural perspective, in dealing with the textual level of analysis, it was necessary to ensure that the cross-cultural comparison of academic writing is made on the comparable data. To that purpose, the study broadly follows the model for contrastive rhetoric research, as discussed by Connor and Moreno (2005) and Moreno (2008).

The model presupposes establishing different types of criteria for comparison or *tertia comparationis* which are considered to be the central precondition in cross-cultural research on academic discourse (Connor & Moreno, 2005). The selection of *tertia comparationis* depends on the respective purpose of the study, but is the key component of the cross-linguistic analysis as it ensures that comparable variables are in fact being compared. It should be pointed out that the concept of *tertium comparationis* is a relative one, which means that it is based on the notion of maximum similarity rather than identitiy between the contrast variables (Connor & Moreno, 2005).

According to the cited model, establishing *tertia comparationis* in cross-cultural studies in academic discourse includes three different levels of research design**:** selecting comparable primary data used for the corpus design, identifying comparable textual constant and designing the taxonomy of linguistic data used for comparison under study.[65] As Connor and Moreno (2005) argue, meeting these criteria will allow a meaningful comparison of the patterns of similarities and differences between the comparable linguistic variables under

[65] In Connor and Moreno's terminology these are labeled as selecting primary data for comparison, textual constants, and textual variables for comparison.

study. Following the general guidelines proposed above, the section that follows focuses on each of the three levels of *tertia comparationis* established for the purposes of the present study in turn.

3.1.1 Corpus design. The overall aim of the present study is to examine the possible cross-cultural variations in the use of the selected domain of epistemic markers in the corpora of the Croatian and English original research articles in psychology. To that aim, a corpus of the Croatian and English research articles in psychology (CORACEN) was compiled.[66] The present study follows in the footsteps of a plethora of the genre-based studies on academic writing which are based on self-compiled, specialized corpora, as discussed at length in Chapter 2. Despite this established practice, it should be noted that a decision to use the tailor-made corpora for the current analysis was also motivated by the fact that at the time of writing the thesis the available Croatian National Corpus did not contain the sub-corpus of academic language which could have been used for the purposes of the study. This automatically meant that the compilation of the English corpus needed to follow the same criteria used for the design of the Croatian corpus.

CORACEN is a tailor-made, specialized corpus, consisting of the two comparable sub-corpora of the research articles in psychology written in Croatian and English. For the sake of convenience, the two sub-corpora were given the abbreviated labels which are used in the subsequent discussion. Thus, Crocor stands for the Croatian corpus, while Engcor represents the English corpus.

The term *comparable corpora* is understood here as the corpora comprised of the texts sharing the same communicative purpose, yet written in distinct languages (Bowker & Pearson, 2002). In line with previous research (Sanderson, 2008), CORACEN was compiled

[66] The full list of the articles used to compile CORACEN can be found in Appendix 14.

by the author of the present thesis and its main purpose is to allow an examination of the use of the epistemic devices in an instance of the disciplinary academic writing in Croatian and English. The total word count of the corpus is **381 016** body words. Given that the aim of the study is to explore the contemporary use of academic language, CORACEN is a synchronic **c**orpus (Bowker & Pearson, 2002), consisting of the articles published in the period between 2005 and 2015. Each sub-corpus consists of 30 research articles published in the selected referred Croatian and English journals in psychology. 10 articles from each journal were selected meeting the criteria discussed below (see Table 2). A vast majority of the articles were retrieved from the electronically published journals, with the exception of the three articles in Croatian which were stored in the paper versions.

The articles included in the corpora used in the subsequent frequency analyses are not represented in their full forms. For the purposes of the present study, and in line with previous research (Fløttum et al., 2006; Vold, 2006a; Šinkūnienė, 2011), only the textual body of the articles was retained and included in the corpora. The titles, tables, figures, references, footnotes, endnotes, appendices, texts under graphic material, information on the authors and similar were excluded from the analysis. In addition, following some previous studies (Hyland, 1998; Koutsantoni, 2006), the analysis did not include the abstracts, as these are considered to be a separate genre with its own rhetorical structure (Hyland, 1998).

As the study aims to explore the variation of the epistemic markers across the IMRAD rhetorical structure of research articles, further sub-corpora were compiled, whereby each represents one of the four RA rhetorical sections in both Crocor and Engcor. As a way of illustration, the Introduction sub-corpus consists of all Introduction sections extracted from the articles in each corpus as a whole. The same procedure was performed for the remaining sections.[67] Table 1 shows the corpus statistics, with the word counts for

[67] Regardless of the variations in the structure of the research articles, the sub-corpora were complied following the IMRAD headings of the main RA sections.

each RA section in each sub-corpus and the total word counts for both the Croatian and English sub-corpus.

Table 1

Number of body words across IMRAD in Crocor and Engcor

	CROCOR (Croatian sub-corpus)	**ENGCOR (English sub-corpus)**
Introduction	45 951	63 640
Method	23 305	51 703
Results	28 948	63 027
Discussion	44 825	59 617
TOTALS	**143 029**	**237 987**

Note. The term *body word* was adopted from Fløttum et al. (2006).

3.1.1.1 Selection of journals. At the outset it must be noted that establishing *tertia comparationis* with respect to the data used for the corpus design was driven by the constraints of the Croatian context in several aspects. The first one refers to a vast discrepancy between the sizes of the Croatian and Anglo-American academic communities and consequently the amount of the available published journals. As expected, the choice of the Croatian scientific journals in psychology is severely limited.

To the best of my knowledge there are only three official Croatian journals that can be considered as predominantly psychological in their scope. These include: *Psihologijske teme* (PT), *Suvremena psihologija* (SP), and *Klinička psihologija*, whereby the last two are the official journals of the Croatian Psychology Association. Only PT and SP were included

in the present corpus given the fact that these journals are indexed in *Hrčak*, the central portal of the Croatian scientific journals, as well as in the citation database *Scopus* (Elsevier).

In order to make the Croatian sub-corpus representative in terms of the contemporary published research articles in psychology, a decision was made to include the articles from *Društvena istraživanja* (DI), a journal broader in scope and covering the area of different social sciences, including psychology. The decision to include this journal was based on a relatively high amount of the published research articles in psychology. Furthermore, the consulted Croatian subject specialists confirmed that it is one of the three most frequent journals for publishing psychology research in Croatia. In addition, the journal is also indexed in the above cited portal and the citation database.

It should be noted that neither of the selected journals is exclusively monolingual as they publish articles in both Croatian and English. Admittedly, the journals which accept articles in a native language as well as the English-medium articles may not be the best representatives of the "culturally specific discourse traditions" (Sanderson, 2008, p. 69), but due to the limited amount of psychology journals in Croatia, this variable could not be controlled. In addition, the fact that the given journals publish articles in the two languages meant that there is a rather limited number of Croatian articles published on a yearly basis. Due to this constraint, there is a relatively long publication span (a 10-year period) of the articles included in the corpus. Another constraint connected with the choice of the available journals is the fact that the selected Croatian journals do not specialize in any particular sub-discipline in psychology but are rather broad in scope, publishing articles on a range of different psychological topics. However, by browsing the titles, abstracts, and the key words in the selected articles, it was possible to discern some general sub-fields of psychology that the topics of the articles address. Though the list is not intended to be exhaustive, generally

the topics of the articles included in the Croatian sub-corpus deal with different aspects of social psychology, psychology of adolescence, personality, individual differences, attitudes, emotions, and motivation.

As already noted, the limitations with respect to the compilation of the Croatian sub-corpus constrained the choice of the English journals to be included in the corpus. In order to have the two sub-corpora as homogenous as possible, an effort was made to select the English journals which broadly specialize in the comparable sub-disciplines in psychology. As a non-subject specialist, my first step was to browse the references listed in the Croatian articles selected for the corpus. It turned out that the majority of the Croatian writers frequently cited the authors whose articles were published in a relatively few English journals. This could have been taken as a sign that the articles published in those journals broadly covered similar research areas as the selected Croatian articles. In addition, the Croatian subject-specialists were also consulted about the often-cited English journals from the sub-disciplines identified in the Croatian sub-corpus (which also happened to be the areas of their research interests). Admittedly, this may not be the perfect method for establishing similarities in terms of the research domains of the journals included in the analysis of this type, but given the circumstances it was the best possible way of compiling as comparable sub-corpora as possible at that point of the research design. The final choice of the journals included in the English sub-corpus included the following: *Journal of Personality and Social Psychology* (JPSP), *Developmental Psychology* (DP) (both published in the USA), and *Personality and Individual differences* (PID) (published in the UK). Table 2 lists the journals included in CORACEN as well as the number of articles extracted from each of them.

Table 2

List of the Croatian and English journals and the number of the articles used for compiling CORACEN

List of CORACEN journals	
List of journals used in Crocor	**Number of articles**
Psihologijske teme (PT)	10
Suvremena psihologija (SP)	10
Društvena istraživanja (DI)	10
TOTAL CROCOR	**30**
List of journals used in Engcor	**Number of articles**
Journal of Personality and Social Psychology (JPSP)	10
Developmental Psychology (DP)	10
Personality and Individual Differences (PID)	10
TOTAL ENGCOR	**30**
TOTAL CORACEN	**60**

3.1.1.2 Corpus size. As can be seen in Table 2, each sub-corpus consists of 30 research articles. The number of the articles to be included in the sub-corpora was decided partially arbitrary, but still broadly following the previous research in which the number of articles per language and per discipline ranged between 17 (Koutsantoni, 2006), 20 (Vold, 2006a; Martín-Martín, 2008; Sanderson, 2008; Šinkūnienė, 2011) to 26 (Hyland, 1998). As Bowker and Pearson (2002) observe, as there are no pre-determined rules on the ideal size of the corpus, the decision on its size is led by the research aim, availability of the data, etc. Given the small size of the Croatian academic community in general, and the discourse

community of psychology in particular, it is believed that the present corpus size could be considered as representative of the disciplinary writing under study and thus allow access to the study of some recurring rhetorical practices in the two academic communities under study (Vaughan & Clancy, 2013). The small size of the disciplinary community of the Croatian psychology scholars can be best illustrated by the fact that it was barely possible to find 30 multi-authored articles published in the selected journals and written by different scholars. The fact is that there are few University Departments of Psychology in Croatia and it is often the same circle of people co-publishing the articles in the available journals. In order to avoid the contamination of the corpus by the specifics of an individual writing style, it was ensured that all the articles included in the Croatian sub-corpus were written by different scholars.

3.1.1.3 Structure and size of the articles. With respect to the type of the articles, the Croatian sub-corpus includes the original research articles (explicitly categorized as such) which follow the IMRAD conventional structure of research articles (Swales, 1990). The selected English journals do not explicitly categorize the article type, but browsing their content it could be concluded that all the articles included in the corpus were based on empirical studies and broadly followed the IMRAD rhetorical structure. It should be mentioned that the rhetorical structure of the English articles was more variable than was the case with the Croatian articles in which the IMRAD structure was pretty much strictly followed. While conforming to the skeleton IMRAD structure, the English articles often break it at the level of the individual sections, thus dividing the text into smaller, titled paragraphs. For example, the Discussion section is often divided into the subsections titled as Strengths and Weaknesses, Implications and Limitations, Conclusion, etc. In addition, some articles are based on the report of the multiple studies. Usually, such articles contain

the general Introduction and the Discussion sections, while the outline of each study follows its own small IMRAD structure. As expected, the articles differed in size both within a single language and cross-linguistically. The length of Crocor articles ranged between ca. 3000-7000 body words, while the length of Engcor articles ranged between ca. 2000-14 000 words.

3.1.1.4 Authorship. An additional variable in the selection of the articles concerned the type of the article's authorship. The present study is based exclusively on multiple-authored articles in psychology. Browsing the published articles in the selected Croatian journals, it could be seen that the multiple-authored original research articles outnumbered the single-authored ones, which seemed to indicate that multiple-authorship is a more representative type of the Croatian research articles in psychology. Likewise, browsing the contents of the selected English journals, it could be deduced that multiple-authorship prevailed in them, too. Furthermore, an attempt was made to ensure that the first author in the article was affiliated with a University Department of Psychology. This was accomplished in a vast majority of cases. Without intention to be biased against writers affiliated with some other institutions apart from the Universities, it was assumed that the articles written by the university-based researchers who are required to publish on a regular basis are the best representatives of the disciplinary writing conventions. Given the overall aim of the present study, this variable was worth consideration.

3.1.1.5 The author's language. Finally, with respect to the language variable, several issues need to be mentioned. Concerning the Croatian articles, it was taken for granted that they had undergone a proofreading process and that the language in which they were written is standard Croatian. However, the situation with the English corpus was far

more problematic. In addition to reliance on the obvious fact that all published articles must undergo a proofreading process done by qualified native speakers, the nativeness of the English used in the articles selected for the present study was ensured (or rather approximated) by following some methodological procedures adopted in previous cross-cultural studies (Yakhontova, 2006; Fløttum et al., 2006; Koutsantoni, 2006; Martín-Martín, 2008; Šinkūnienė, 2011; Yang et al., 2015).

More specifically, the selection of the articles was based on two criteria. To start with, the first author of the article, who was presumably its main writer, had to have an English-sounding name and surname. In that way the likelihood that the language used in articles was native English was only increased. Admittedly, the stated criterion alone does not warrant the nativeness of the language, as was acknowledged by previous research too (Fløttum et al., 2006; Yang et al., 2015). In that respect, I go along with the position taken by Fløttum et al. (2006) and acknowledge that though there is a possibility that English was not the mother tongue to all the writers whose articles are included in the present study, the study is based on the premise that the number of non-native English speakers is probably not that high to contaminate the representativity of the corpus.

The second criterion was that the first author of the selected articles had to be affiliated with a University Department of Psychology in a country where English is the official language. This criterion had to be adopted in such broad geographical terms, given the fact that it was impossible to collect the targeted number of articles whose first author has an English-sounding name and surname and is affiliated to a University Department located in a country in which English has official language status. The majority of the first authors whose articles are included in the present corpus are affiliated to U.S. institutions, however in a few cases the writers are affiliated with British, Canadian, and Australian universities. Therefore, the term *English writer* is used here to refer to the American, British,

Canadian and Australian speakers, affiliated to Universities from the respective countries (Koutsantoni, 2006). Considering the potential variations in the rhetorical conventions of the respective varieties of English (Sanderson, 2008), such a geographically and culturally diverse corpus may be regarded as a potential limitation of the present study (Fløttum et al., 2006). However, I am not aware of a study which found the statistically significant differences with respect to the use of the epistemic markers as hedges in research article writing as a function of a distinctive variety of English. Therefore, the present study follows in the footsteps of the previously cited cross-cultural studies, which faced with similar difficulties in identifying the authors' language background, did not adopt any other of the above stated methodological procedures to control for the variable of the native language.[68] Furthermore, in line with previous research (Koutsantoni, 2006), the present study adopts the collective term *Anglo-American community*, when referring to the academic writing originated in the English-speaking countries, as stated above. The primary data used as *tertium comparationis* for the compilation of the two comparable corpora used in the present study are summarized in Table 3, as follows.

Table 3

Tertia Comparationis used for compiling CORACEN

Tertia Comparationis	
Genre	Original research article (RA)
Sources for extraction of research articles	Refereed journals
Number of published research articles	30 per corpus

[68] One of the most notable exceptions in that respect is Sanderson's study (2008).

Academic discipline	Psychology
Broad sub-disciplines	Social psychology; psychology of adolescence; psychology of personality, individual differences, attitudes, emotions and motivation
Publication span	2005-2015
Authorship	Multiple-authorship
Language	Native languages: Croatian and English
Institute affiliations of the (first) authors	University Departments of Psychology
Structural layout of a research article	IMRAD structure

3.1.2 Establishing the textual constant. In line with the methodological framework proposed above, the next level of establishing *tertia comparationis* involved identifying the textual constant in the cross-cultural analysis. In the current study this is the conceptual category of epistemic modality which, as Nuyts (2001) argues, can be considered as "probably a basic category of human conceptualization in general" (p. 23), whose linguistic exponents have been recognized as performing specific pragmatic effects in a given discourse type.

In the context of academic writing, a plethora of empirical studies on English as well as other languages have established that the use of epistemic markers underlies a number of the evaluative categories in academic discourse, as was discussed in the previous chapter. Therefore, the position adopted in the present work is that epistemic qualifications are an inherent aspect of the contemporary scientific writing. Against this background, the study is based on the assumption that both Croatian and English writers of research articles use a

selected array of epistemic markers to qualify scientific claims with varying degrees of certainty which is in this study broadly associated with the rhetorical functions of hedging (Hyland, 1998; Hyland, 2005a). The outline of the procedures of selecting and taxonomizing the epistemic markers in research articles under study is the focus of the next section.

3.1.2.1 Designing the taxonomy of epistemic devices. This stage of research involved deciding on the linguistic realizations of the category to be analyzed across the two corpora. Ideally, the study of this kind would rest upon the comparable theoretical frameworks of the same linguistic phenomenon in the languages investigated. However, to the best of my knowledge, at the time of writing the present thesis there has been no comprehensive account of epistemic modality and its linguistic exponents in Croatian, with the exception of Kalogjera's (1982) account on modal auxiliaries in Croatian.

Therefore, the taxonomy of the Croatian epistemic markers in this study largely relied on the existing literature on epistemic modality in English. Nevertheless, in compiling the Croatian taxonomy, several sources which in some way deal with modality in Croatian were consulted. These include: the grammars of the standard Croatian language (Katičić, 2002; Silić & Pranjković, 2005; Barić et al., 2005), Sesar's (1992) account on the modal particles in Croatian, and Letica's (2009) study on the use of epistemic markers by Croatian speakers in both Croatian and English. In sum, the present analysis is not based on any pre-determined taxonomy of the epistemic markers but starts with what was actually found in the corpus itself (Vold, 2006a). At this point, it should be noted that the present analysis focuses only on the lexico-grammatical units of epistemic markers, excluding thus the clause or paragraph as units of analysis (Vold, 2006a).

The first step in the analysis was to list and compare the epistemic markers performing hedging functions and epistemic stance in academic writing in English based on

the taxonomies in some major studies on that matter, in particular Hyland (1998) and Hyland (2004), and Biber (2006a), as well as some empirical studies (Vihla, 1999; Vartalla, 2001; Vold, 2006a, 2006b). The extracted English epistemic markers were compared with the data that could be found in the existing literature in Croatian (see above). In case they were not present in the available literature, they were translated into Croatian. The overall lists of both English and Croatian epistemic markers used in the analysis are provided in Appendix 12.

The next step involved the extraction of the selected epistemic markers in both sub-corpora. In line with previous research (Sanderson, 2008), the methodological procedure adopted here combined the corpus-linguistic analytical method with a discourse-oriented approach which involved checking manually the contextual use of the epistemic devices under study. The former involved the identification of the epistemic devices by means of the lexical analysis software Wordsmith Tools 6.0, in particular the Concordancer tool (Scott, 2012). The concordancer, Concord, is convenient for the contextual analysis, as it retrieves all the occurrences in which the key word was used in the target sub-corpus. It also allows going back into the original text and checking the context in which the target item was used.

As the meaning of the epistemic markers is largely contextually-bound and frequently polysemous, a decision on the epistemic meaning and consequently the inclusion in the corpus was subjected to close scrutiny of the surrounding context in the articles from which they were extracted. Thus, the automatic identification of the data was supplemented by a discourse-analytic methodology which aimed to ensure that the items included in the analysis met the selection criteria to be included in the analysis (Sanderson, 2008). This was especially important for the analysis of the highly polysemous modal verb *may* and its Croatian cognate *moći*, which may allow for rather indeterminate meanings, difficult to demarcate even in the presence of the contextual clues (cf. Chapter 4). However, polysemy of the modals as well as the distinction between epistemic and non-epistemic meanings of

other devices under study, are discussed in more detail in the individual sections focusing on each respective category of the epistemic devices included in the analysis. Prior to the outline of the final taxonomy used in the present study, it should be noted that in choosing the devices to be analysed, there is always a certain degree of subjectivity on the part of an analyst. This is especially prominent in dealing with an indeterminate and elusive category such as hedging and modality which underlies some of its core exponents. For the reasons of convenience, the rationale for excluding some devices which were included in the taxonomies of the hedges used in previous research is discussed in the separate sections dealing with the analysis of the corpus data.

3.1.2.1.1 The outline of the taxonomy of the epistemic devices used in the present study. As previously stated, the study explores only lexico-grammatical units of epistemic modality in both languages, excluding thus other grammatical means of expressing the given category, e.g. tense (Nuyts, 2001; Trbojević-Milošević, 2004). In particular, the focus is placed on the major categories of epistemic modality, as proposed by previous research (Kalogjera, 1982; Perkins, 1983; Nuyts, 2001; Halliday & Matthiessen 2004; Biber, 2006a). These include **epistemic modal verbs, epistemic adverbs, epistemic adjectives** and **epistemic verbs** concerned with the estimations of possibility/probability or likelihood of a state of affairs being true. However, the present analysis extends the proposed taxonomy by including **the epistemic nouns** in the analysis as well. The decision to include the nouns into the study was motivated by the fact that scientific writing is typically characterized as a highly nominal style, heavily relying on the nominalized structures (Halliday & Martin, 1993; Schmid, 2000; Hyland, 2006a; Oraić Tolić, 2011; Biber, 2013). In addition to the above stated core epistemic modal categories, the analysis also includes the category of **the epistemic-evidential verbs**, in particular *seem* and *appear* and the Croatian verb *činiti se*.

Though the linguistic status of these verbs is discussed in more detail in Chapter 9 and will not be initiated here, at present it suffices to note that they are considered to be among the salient hedging devices in academic writing, which is the main motivation for including them in the present analysis (Hyland, 1998; Vihla, 1999; Hyland, 2005a; Vold, 2006a, 2006b).

The following examples extracted from Engcor illustrate each category of the epistemic devices used in the present analysis:

1. Epistemic modal verbs: *For instance, it may be that there is a group of youth that continues to be highly involved in school behaviorally and another group of youth that loses interest in academic work as their educational career progresses.* (DP10)

2. Epistemic adverbs: *In the present study, there were no differences in the P3 between age groups, possibly indicating that the reduction of the ERN in younger adolescents on both tasks was likely due to immaturity of the error monitoring system.* (DP8)

3. Epistemic adjectives: *Although contempt and moral disgust have often proven difficult to separate, our extended social-functionalist perspective suggests a possible distinction between them. (= it is possible that there is a distinction between them)* (JPSP4)

4. Epistemic nouns: *Another possibility is that risk for suicide might vary based on the function of NSSI.* (PID5)

5. Epistemic verbs: *Based on findings by Nock and Prinstein (2005) and Klonsky and Olino (2008), we believe the tendency to self-injure alone (henceforth AL-NSSI) may be an easily measurable and theoretically meaningful marker for suicide risk among those who self-injure.* (PID5)

6. Epistemic-evidential verbs: *From these findings, it appears that while perceptions of parenting at age 17 predict what kind of romantic relationship story individuals choose to tell almost 10 years later...* (DP6)

With the exception of the attributively used epistemic adjectives,[69] the above examples conform to the lexico-grammatical features used in Biber's (2006) model of stance, in which three major structural categories of stance devices are distinguished, including a) **modal auxiliaries;** b) **stance adverbs;** c) ***-that/-to*** **complement clauses controlled by stance verbs/adjectives/nouns.** These structural features are essentially followed in the present analysis,[70] which means that the instances, such as (a) below, in which the implicit proposition is missing (Zvekić Dušanović, 2011), are excluded from the analysis. In other words, the analysis is focused only on the instances with the explicit presence of the propositional content (Vold, 2006a).

a) As hypothesized, Model 2.0 indicated that self-surveillance significantly increased from fifth to ninth grade (see Figure 2). (DP7)

With respect to the Croatian corpus, the examples below illustrate the categories of the epistemic devices used in the analysis:

1. Epistemic modal verbs: *Općenito govoreći, izneseni razultati upućuju na veću ranjivost žena i veći utjecaj muškaraca na bračnu kvalitetu i dobrobit žena što može biti važan pokazatelj bračne dinamike.* (PT7)

2. Epistemic adjectives: *Jedno od mogućih objašnjenja dobivenih rezultata jest da mladići i djevojke ostvaruju osjećaj bliskosti kroz različite oblike odnosa.* (PT8)

3. Epistemic particles: *Međutim, učinci nezaposlenosti vjerojatno nisu jednaki za sve skupine nezaposlenih, jer, osim kontekstualnih, postoje i osobni čimbenici koji mogu moderirati utjecaj nezaposlenosti na zdravstveno stanje pojedinaca.* (SP8)

4. Epistemic nouns: *Pri tome ne možemo zaključivati o uzročno-posljedičnim vezama jer postoji mogućnost da ispitna anksioznost uzrokuje slabiju prolaznost i niže ocjene, kao i*

[69] The epistemic meaning of the adjective *possible* in example sentence (3) is clearly deducible from the glosses indicated in the brackets. For this reason and in line with some previous studies (Hyland, 1998; Vihla, 1999), the attributively used epistemic adjectives are included in the present analysis.

[70] The epistemic-evidential verbs occur in other syntactic patterns as well, but this is discussed at length in Chapter 9.

mogućnost da slabija prolaznost odnosno učestali padovi na ispitima i loš uspjeh na studiju uzrokuju pojavu ispitne anksioznosti kod studenata. (PT3)

5. Epistemic verbs: *Smatramo da je to rezultat veće usmjerenosti istraživača na mlade s ranim javljanjem društveno neprihvatljivoga ponašanja (npr. Moffitt, 1993; Patterson i sur., 1992), što dovodi do boljega prepoznavanja činitelja ključnih za ovu skupinu mladih.* (PT9)

6. Epistemic-evidential verbs: *Čini se da je za doživljavanje pozitivnih ispitnih emocija, važnije na koji način učenici samoreguliraju svoje emocije i motivaciju prilikom učenja, od same činjenice da to uopće čine.* (SP2)

As can be seen, in the last three categories of the taxonomy used for analyzing the Crocor data, the epistemic devices control the complement clauses introduced by the conjunction *da*. Though this conjunction is prevailing in the Croatian sub-corpus, the occurrences with the conjunction *kako* are also included in the analysis.

3.1.3 Frequency analysis. Once the extracted epistemic devices were classified into the above outlined categories, raw frequencies were calculated for each epistemic device across the RA rhetorical sections. Raw frequencies were then normalized to a text length of 1000 words, given the mean length of the articles included in the study. The use of normalized frequencies represents a standard methodological procedure for comparing the frequency counts across the texts which differ in length (Biber, 1988). In addition, it is prevalently used in similar research on academic writing (Hyland, 1998; Vold, 2006a, 2006b; Šinkūnienė, 2011; McGrath & Kuteeva, 2012). The normalized frequencies are calculated according to the following formula (Biber, 1988):

(raw frequency count/ total words in the text) x 1000

At this point it should be noted that the study aims to elucidate broad distributional patterns in the use of the epistemic devices across the two academic cultures, and as such does not use any other more stringent statistical method in the analysis of the corpus data. In that respect, the methodological approach adopted here uses the frequencies as "a springboard to more qualitative study", i.e. "as a basis for characterising broad similarities and differences" in the cross-cultural academic writing at hand (Hyland, 2004, p. 141).

3.2 Extra-textual sources of data

In line with the methodological framework sketched out at the beginning, the qualitative methodology employed in this study involved collecting data from the extra-textual sources. These related to the data gained by conducting the semi-structured interviews (Bryman, 2012) with subject specialists, in particular psychologists affiliated to the Croatian and U.S. University Departments of Psychology and who are actively publishing research articles in their fields. The interviews were conducted primarily with the aim of gaining insight into the disciplinary writing conventions regarding the preferred choices of epistemic markers as well as their rhetorical functions. There were four Croatian and American informants who participated in the interviews. The interviewees were asked to identify and discuss the forms which they thought were used to express caution and tentativeness in qualifying the claims in their writing (the request form for the participation in the study in both Croatian and English is given in Appendix 12). Their responses were then discussed either in person or electronically, via Skype. During the interviews, the informants were additionally asked a number of open questions which aimed to elicit their general comments on the underlying motivation for the use of tentative language in academic writing against the broad characteristics of psychology. All the interviews were recorded with the interviewees'

consent (Bryman, 2012). The recorded interviews enabled retrieval of the informants' commentaries at different stages of research (Hyland, 1998). It must be noted, however, that the role of the interviews was not meant to be one of the focal points in this study but it was largely considered as a means of gaining supplementary data to the overall analysis (Hyland, 1998). Therefore, the informants' responses and commentaries are neither presented nor analyzed here in a systematic way but are integrated into the discussion and interpretation of the research findings where appropriate.

4. Corpus analysis

The analytical part of the thesis deals with the outline and the discussion of the corpus findings. As outlined in the Methodological framework, the analysis is divided into 5 main chapters, each focusing on a single category of the epistemic devices. The chapters are organized as follows. First, the analysis of the English findings is provided, followed by the congruent analysis of the Croatian findings. The comparative findings between the Engcor and Crocor data are presented at the end of each chapter. Given their congruency, the hedging functions of the epistemic modal verbs, adjectives, adverbs, and nouns are discussed separately, while the hedging functions of the remaining categories of the epistemic devices are discussed in the respective chapters. The analytical part of the thesis closes with the outline and discussion of the overall findings of all epistemic devices examined in both Engcor and Crocor.

4.1 Epistemic modal verbs in Engcor

The first category of the epistemic devices under study relates to the modal verbs. At the outset, it should be emphasized that in line with the definition of epistemic modality adopted in the present study as well as previous research on epistemic modality in academic discourse (Vold, 2006a, 2006b), the present analysis includes only the modals whose meanings are concerned with expressing epistemic judgments concerning the possibility "that something is or is not the case" (Palmer, 1990, p. 50). In the present analysis, these include a rather closed set of modals, viz. *may, might,* and *could*. The status of the given verbs as the core modals expressing epistemic possibility is well-established in the literature on modality in general English (Perkins, 1983; Coates, 1983; Brdar et al., 2001) but also in

academic English (Biber et al., 1999; Carter & McCarthy, 2006). According to Coates (1983), *may* and *might* are the primary modals for conveying epistemic possibility, as well as *could*, albeit less frequently than the former two. The common feature of the epistemic use of the modals relates to a speaker's indication of a lack of confidence in the proposition, which can be attested by the paraphrase: 'it is possible that.../perhaps' (Coates, 1983; Palmer, 1990), as shown in the sentences below:

61. *For instance, it may be that there is a group of youth that continues to be highly involved in school behaviorally and another group of youth that loses interest in academic work as their educational career progresses.* (DP10) (= it is possible that there is a group...)

62. *This research suggests that sexual behaviors that are perceived to be upsetting might be a better predictor of negative correlates of sexual harassment, such as disordered eating, than of sexual behaviors that are perceived as harmless.* (DP7) (= it is possible that sexual behaviors that are perceived to be upsetting are a better predictor...)

63. *It is important to note that the well-known sensitivity of Cronbach's alphas to the number of items could be a reason for the low values of some of the coefficient alphas reported in the current study (Streiner, 2003).* (DP10) (= it is possible that the well-known sensitivity of Cronbach's alphas to the number of items is a reason for...)

For Carter and McCarthy (2006), the fact that scholars often deal with probabilities, hypothesis, and tentative statements makes the usage of the modals *may*, *might*, and *could* salient in academic writing, particularly in performing hedging functions, which has been attested by a plethora of studies on research article writing (Hyland, 1998; Vihla, 1999; Vartalla, 2001; Vold, 2006a, 2006b; Šinkūnienė, 2011).

In addition to the indicated modals, previous research on academic writing reports on the hedging functions of other English modals, such as *would, should, will, must,* and *can* (Hyland, 1998; Vartalla, 2001). However, the decision not to extend the present analysis

onto these additional modals is based on the fact that their core meanings do not relate to the nature of the epistemic judgments as indicated above. Though not meant to be exhaustive, the examples which follow may serve to illustrate the point.

In Coates' (1983) seminal analysis of the semantics of English modal auxiliaries, *would* is, among others, classified as a generic hypothetical marker conveying epistemic meanings. In addition, Hyland (1998) discusses the occurrences of the hypothetical readings of *would* within the context of scientific hedges, the use of which may be shown in the following example:

64. *Third, are these links constant, or do they vary at different levels of school performance (as would be the case if they were moderated by school performance)?* (DP4)

However, as Vartalla (2001) rightly observes, in instances such as (64), the meaning conveyed by the modal does not seem to entail the writer's tentative speculation on the possibility of a state of affairs taking place, as implied by a typical hedge, but is rather related to the condition expressed in the *if*-clause.

Nevertheless, in addition to the occurrences in which *would* is used to mark a pure hypothesis, the modal may be used to perform hedging functions (Hyland, 1998). Such is the case of harmonic combinations, i.e. co-occurrences with other devices which already perform hedging functions, as for instance, the verbs *seem* or *appear* (Coates, 1983). As will be seen throughout the subsequent analysis, modal devices generically tend to occur with harmonic devices of comparable semantics, whereby they mutually reinforce each other (Coates, 1983; Huddleston & Pullum, 2002). For instance, though in the following example *seem* marks the writer's reservation towards the propositional content, the use of *would* further increases the hedginess of the claim:

65. *Finally, although its aggressive action tendencies would seem to make it the most dangerous emotion, anger might actually be the least negative, because it may be focused on temporary behavior rather than lasting judgments.* (JPSP4)

In addition to *would*, *should* has also been documented as a modal whose epistemic readings can be linked with hedging functions in academic writing (Hyland, 1998; Vartalla, 2001). Generally, in its epistemic use *should* is associated with indications of a logical assumption or necessity, the force of which is considered to be weaker than that of *must* (Palmer, 1990). Academic writers may use s*hould* when they wish to signal their lack of full commitment to the categorical conclusions (Hyland, 1998; Vartalla, 2001; Šinkūnienė, 2011), as shown in the following example:

66. *Our results are consistent with the GAM because the knowledge structures associated with disgust promote behavioral avoidance, and behavioral avoidance should be associated with lower levels of aggression.* (JPSP6)

However, given that its core epistemic (but also evidential) meaning is tied to signaling tentative inferences (Hoye, 1997; Nuyts, 2001),[71] rather than assessments of possibilities which is the core modal concept examined here, the use of *should* is not considered in the present analysis.

The final modal that merits closer attention here is *can* whose saliency in academic discourse has been reported in large-scale corpus studies, such as Biber et al. (1999) and Leech, Hundt, Mair and Smith (2009). In addition to *may*, *can* is the primary modal for conveying possibility meanings in English. In their prototypical uses, however, the two modals indicate distinctive types of possibility. While *may* is associated with expressing

[71] *Should* is used to convey a writer's tentative inference based on rather solid evidence which is, however, still not complete to allow a categorical assertion (Hoye, 1997; Nuyts, 2001).

factual (more immediate) possibility, *can* is typically used to signal theoretical possibility (Leech, 2004), as indicated below:

a) *Chest pain can be an early sign of a heart attack.* = THEORETICAL POSSIBILITY (e.g. Medicine postulates that it is theoretically possible for chest pain to be an early sign of a heart attack.)

b) *Chest pain may be an early sign of a heart attack.* = FACTUAL POSSIBILITY (e.g. It is possible that the chest pain which a person is feeling at the time of the utterance is an early sign of a heart attack.)

Despite these common usages, *may* rather than *can* seems to be more versatile in allowing for indeterminacy between distinctive types of possibilities, which is discussed at length in the next section. However, though the epistemic meaning of *can* is associated with the interrogative (*Can it be true? = Is it possible that it is true?)* as well as the negative forms (*You can't be serious! = It is not possible that you are serious!),* there are some indications that *can* may be acquiring epistemic meanings in affirmative statements, too (Perkins, 1983; Coates, 1983). Coates (1995) restricts such uses of epistemic *can* to American English, in particular the spoken register. For example, in the sentence:

c) *"We hope this coding system can be useful [to other linguists working in the field]."* (Coates, 1995, p. 63)[72]

a speaker's intended meaning was probably something like 'We hope that the coding system is likely to be useful', which clearly suggests the epistemic reading of *can* and its status as a hedge, as admitted by the original speaker of this utterance (Coates, 1995). While tentatively proposing the possibility that *can* might be acquiring epistemic meanings, Coates suggests

[72] In the original sentence (Coates, 1995) the initial word was not capitalized and the full stop was absent.

that such occurrences are connected with a set of co-occurring syntactic patterns, in particular the presence of an inanimate subject, a stative verb and some other signals of subjectivity of the utterance (such as *I hope* in the example above).

As for the occurrences of epistemic *can* in academic writing, Vartalla (2001) reports on their rather limited frequencies, while Šinkūnienė (2011) reports on the absence of the epistemic uses of the modal in her corpus of research articles in linguistics and medicine. Along similar lines, the examination of Engcor pointed to few occurrences which could be related to the epistemic readings of *can*, one of which is shown as follows:

67. *Our findings also have important implications for social psychology. The lack of blocking in Studies 2 and 3 suggests that when our experience and the opinions of others agree, the information may be especially compelling (Asch, 1951; Laughlin & Ellis, 1986). Certain social influence work can potentially be reconceptualized as an examination of how people deal with the combination of direct nonsocial information and social information.* (JPSP1)

In addition to the criteria established by Coates (an inanimate subject and a stative verb), the epistemic overtone conveyed by *can* in example (67) is further reinforced by the presence of the probability adverb *potentially* (Vartalla, 2001), which is a clear signal of the tentative status of the claim.

The epistemic meaning of *can* may be further tested by its substitution with the modal *may*, yielding the following: *may be potentially reconceptualized*. As can be seen, the replacement of the modals does not affect the meaning of the statement which lends support to the epistemic reading of *can*. In fact, the whole paragraph can be interpreted as the writer's tentative speculation, which, in addition to the indicated adverb, is signaled by the

choice of the tentative discourse verb[73] *suggest* in the previous sentence and the epistemic uses of the two modals.

It may be argued that assigning the hedging status to the use of the modals as indicated above depends on the defining characteristics of hedges and the approach one chooses to follow in the empirical analysis. With respect to the present analysis, given the overall focus on the modal verbs whose prototypical meanings relate to the expressions of epistemic possibilities, the occurrences such as (64-67) were not included in the frequency analysis.

4.1.1 Overall findings of the epistemic modal verbs in Engcor. Turning back to the Engcor findings, the overall distribution of the epistemic readings of the three modals under study are shown in Figure 3, while the raw and normalized frequencies of each modal can be found in Table A1 (Appendix 12). As indicated earlier, the frequency counts of all epistemic devices included in the analysis are presented across the IMRAD structure of the research article.

As can be seen in Figure 3, the distribution of the modals reflects the overall rhetorical functions of the individual RA sections. The highest frequency of the modals was recorded in the most argumentative RA sections, in particular the Discussion (n/1000 = 7, 69), followed by the Introduction section (n/1000 = 3, 91). On the other hand, the two rather descriptive sections showed a significantly lower frequency of occurrences, with the Results pointing to 0, 55 and the Method section to 0, 40 modals per 1000 words. At the level of the

[73] The term *tentative discourse verb* has been coined based on the typology of the reporting verbs in academic writing as proposed by Thomas and Hawes (1994). According to the authors, discourse verbs denote "activities that are linguistic in nature and involve interaction through speech or writing" (p. 137) and may include verbs that denote a writer's ceratinty (e.g. *conclude, maintain*) or tentativity (e.g. *suggest, indicate*) with respect to the proposed claims.

individual modals, findings point to the overwhelmingly highest frequency of *may* (n/1000 = 2, 28) in all four RA sections as compared to the significantly lower frequencies of *might* (n/1000 = 0, 466) and *could* (n/1000 = 0, 462).

The present findings broadly support the general tendencies in the frequency of the given verbs as reported by the results of both large-scale (Biber et al., 1999) and small-scale corpus-based studies (Vihla, 1999; Vold, 2006a, 2006b; Šinkūnienė, 2011). This particularly relates to the striking centrality of *may* in academic writing. As a way of illustration, the LSWE findings showed ca. 2800 of *may*; 800 of *could* and 600 occurrences of *might* per million words in academic prose. Smaller-scale studies on academic writing show similar tendencies with respect to the rank of frequencies of the given modals (Hyland, 1998; Šinkūnienė, 2011). To illustrate, the findings of Hyland's (1998) study on the use of hedges in research articles in molecular biology showed the following distribution of the three modals in question: *may* (n/10 000 = 9, 2); *could* (n/10 000 = 6, 4); *might* (n/10 000 = 3, 6). In addition, Šinkūnienė's (2011) frequency analysis of the epistemic modality markers in the corpus of linguistics articles yielded the following results: *may* (n/1000 = 1, 8); *could* (n/1000 = 0, 03); *might* (n/1000 = 0, 2), while the use of modals in the corpus of medicine articles showed the following distribution: *may* (n/1000 = 1, 6); *might* (n/1000 = 0,5); *could* (n/1000 = 0, 3). Given the centrality of *may* in Engcor, the discussion that follows starts with the account of this modal.

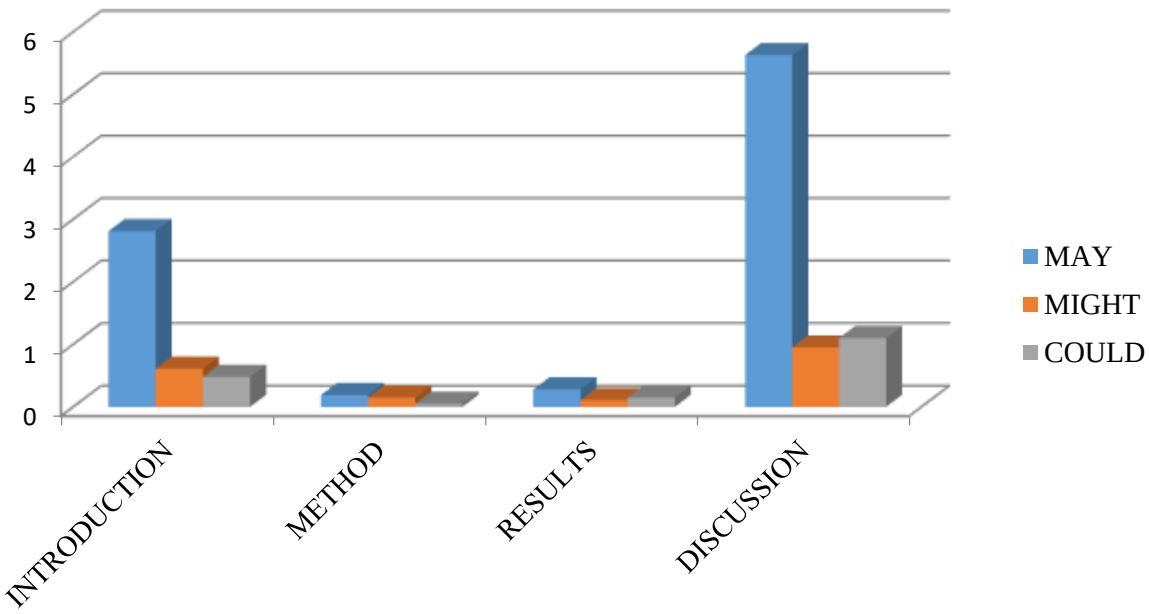

Figure 3. Distribution of *may, might*, and *could* across IMRAD

4.1.1.1 The modal verb MAY. In accounting for its use in academic writing, it is important to highlight that though *may* is the typical exponent of the epistemic modal meanings, in particular epistemic possibility, epistemic modality is not the only semantic domain associated with this modal. The examination of Engcor showed at least three possible meanings conveyed by *may*, each of which is exemplified and discussed further below. It should be noted that certain issues concerning the types of modality discussed here have already been indicated in the general remarks on modality in Chapter 2. The present discussion, however, is more specific in its focus. It aims to elucidate the distinctive modal meanings of *may* on the examples extracted from the present corpus and at the same time account for the data included in the analysis. The Engcor findings show that the most prototypical use of *may* is concerned with expressing epistemic judgments. The epistemic status of the modal may be attested by the paraphrase given in the brackets shown below:

68. *For instance, it may be that there is a group of youth that continues to be highly involved in school behaviorally and another group of youth that loses interest in academic work as their educational career progresses.* (DP10) (= it is possible that there is a group of youth that continues to be...)

The co-occurrence of *may* with the impersonal subject *it* followed by extraposed *that*-clause, as in (68) represents the prototypical epistemic use of the modal in signaling a writer's lack of commitment to the propositional content. The additional epistemic uses of the modal may be identified by particular syntactic patterns, such as the progressive aspect (e.g. *A third variable…may be driving the trends seen here*); perfective aspect (e.g. *This broad range may have precluded observation of subtle age differences between younger and older adolescents*), or existential subject (e.g. *The fact that the storage abilities do not dissociate suggests that there may be a common process or mechanism driving the development of …*) (Coates, 1983).

In addition to the epistemic meanings, the corpus findings also point to the dynamic readings of *may*, as in:

69. *Beyond pragmatics, it is also important to acknowledge that group status or treatment may be communicated to a child through many separate dyadic interactions with multiple peers.* (DP3) (= it is possible (for x) to communicate group status or treatment to a child through...)

As can be seen, the dynamic reading of *may* allows for the following paraphrase: 'it is possible for (x) to …'. The dynamic reading of the modal indicates a possibility enabled by some unspecified (yet conceptually present) external source (Radden & Dirven, 2007).[74] Though this type of dynamic possibility is typically associated with *can*, the indicated dynamic use of *may* is common in formal contexts, such as academic writing (Coates, 1983;

[74] This type of modal meaning can be found under different labels, such as *root possibility* (Coates, 1983) or *intrinsic possibility* (Radden & Dirven, 2007).

Radden & Dirven, 2007). In such uses both *may* and *can* are commonly associated with general statements so it is not uncommon for the modals to occur in passive constructions, as indicated above (Radden & Dirven, 2007).

As noted in Chapter 2, a particular case of dynamic modality associated with the modal *may* refers to its existential use and is prototypically related to the scientific contexts (Huddleston, 1971; Palmer, 1990; Facchinetti, 2003). Example (70) may serve as an illustration of the existential reading of *may*:

70. *First, the Pe is a late positive component peaking 200-500 ms after an error response. The Pe is maximal at a more posterior scalp location and may be generated by the rostral ACC as well as parietally (Kaiser, Barker, Haen-schel, Baldeweg, & Gruzelier, 1997; Herrmann et al., 2004; Van Veen & Carter, 2002).* (DP8)

The main difference between the epistemic and existential dynamic uses of *may* is that the latter does not imply the epistemic assessment, as denoted by epistemic modality, but rather refers to a state of disciplinary knowledge (i.e. an objectively measured possibility). In the example above, it is clear that the writer does not indicate his or her or other scholars' subjective assessment of the state of affairs but rather reports on a scientific fact which is possible to be checked against some objective data (Facchinetti, 2003). In line with the aim of the present study which focuses on the epistemic uses of the modal markers generally, the dynamic uses of *may* were not included in the analysis.

Finally, in addition to the instances in which the epistemic and dynamic readings of *may* are rather unproblematic to discern, in some cases disambiguating the intended reading of the modal is less straightforward. For instance, in the following sentence:

71. *In summary, a number of factors may independently or additively increase the demands associated with interacting with someone who is prejudiced against one's group.* (JPSP10)

the distinction between epistemic and dynamic meanings of *may* is rather blurred. This is evident by the fact that the meaning of *may* can be glossed by both of the following paraphrases:

71.' *It is possible that a number of factors independently or additively increase the demands.* (EPISTEMIC POSSIBILITY) and

71.'' *It is possible for a number of factors to independently or additively increase the demands.* (DYNAMIC POSSIBILITY)

The occurrences of *may* which allow for both epistemic and dynamic readings are commonly labeled as 'mergers' (Coates, 1983). As previously mentioned in Chapter 2, the fact that the two modal meanings blend does not pose any difficulties in comprehending the message, which means that the co-existence of the two meanings probably goes unnoticed for a reader (Nuyts, 2001). Coates (1983) and Palmer (1990) report that the instances of the overlaps between the epistemic and dynamic readings of *may* are the typical feature of the formal written registers, while Coates (1995) explicitly states that mergers are becoming endemic in academic writing. In line with previous studies (Hyland, 1998; Vartalla, 2001; Šinkūnienė, 2011), given the presence of the epistemic component, the instances of merger *may* were included in the present analysis and added to the overall frequencies of the epistemic occurrences of *may*.

Against the foregoing discussion aimed to account for the polysemous nature of the modal *may*, all the occurrences of *may* extracted from Engcor were subjected to a rather scrutinized analysis which was primarily conducted to ensure that the frequency counts referred to the epistemic instances of *may*. Accounting for the indeterminate modal

meanings may be particularly challenging because in some cases the contextual clues may not be revealing enough in determining the intended modal meaning. In other words, if the analysis is done by a single analyst only, there is a risk that the decision on the targeted modal meaning is purely subjective. As acknowledged in previous research, the subjectivity of human judgment in this respect may pose a considerable methodological challenge in the corpus–based discourse analysis of this kind (Kanoksilapatham, 2007). In order to reduce the possibility of a biased interpretation of the polysemous meanings of *may* (but also the Croatian modal *moći*), all occurrences containing the given modal were extracted from Engcor and analyzed independently by the present author and a second rater. The analysis was preceded by the training session during which the coding scheme for the polysemous status of the modals was established. This primarily related to the set of the example sentences extracted from the present corpus and the paraphrases illustrating the distinctive modal meanings of *may*. The overall results between the present author and the second rater showed a 90% agreement rate, while the remaining discrepant cases were resolved in the subsequent discussion. It was only after the results were compared and the discrepant cases discussed, that the frequency analysis was conducted. The overall findings point to the predominance of the **epistemic** use of *may*, accounting for **68%** of the overall occurrences of *may* in Engcor. **Merger** cases accounted for **20%**, while **dynamic** readings for **12%** of *may* instances.

The present findings are generally in line with the predominantly epistemic semantics of the modal, as reported by the large-scale diachronic corpus-based study on British and American English (Leech et al., 2009). The findings point to the increasingly monosemous (i.e. epistemic) status of *may* in contemporary British and American English, whereby the use of its other meanings, particularly the meaning of root (or dynamic) possibility, are declining in use, presumably giving way to a high-frequent use of *can* (Leech

et al., 2009). In addition, Facchinetti's (2003) research on the distinctive meanings of the present-day usage of the modal *may* in the British component of the International corpus of English[75] showed 61% of the epistemic uses of *may*, and 24% of the dynamic existential *may* while the rest accounted for the deontic readings and the borderline cases of *may*.[76] Similar tendencies can be observed in some smaller-scale corpus-based studies on hedges in research article writing. For example, Šinkūnienė (2011) reported on 68% of the epistemic *may* occurrences in the corpus of linguistics research articles, and 66% in medical research articles, while the non-epistemic uses accounted for 32% in linguistics and 34% in medical articles. Generally, it may be argued that the current findings follow previous research which consistently show that *may* in academic writing is the central modal verb used for conveying epistemic modal meaning (Leech et al., 2009).

4.1.1.1.1 Discussion of the corpus findings for MAY. As can be seen in Figure 3, the highest frequency of all modals, but particularly *may* was recorded in the Discussion section (n/1000 = 5, 63), which was expected given the overall rhetorical function of this RA section. It is in the Discussion that writers engage in interpretations of the results, speculate about the possible causes of the findings, and provide implications for further research, which is rarely conveyed in unmitigated forms (Hyland, 1998). The following examples may serve to illustrate the point:

72. *Though we clearly had power to identify several moderating effects, there may have been others present that would have required a larger sample size to detect.*

[75] The corpus consists of 300 spoken and 200 written texts and totals 1 million running words (Facchinetti, 2003).

[76] With respect to academic writing, corpus findings show that epistemic uses of *may* are prevalent in Social Sciences and Humanities, while the existential readings of the modal are more frequent in Natural Sciences and Technology.

Although the overall pattern of results matched our predictions, we believe that the relatively weak simple effects observed in this study may have been due to the impoverished nature of the interaction. (JPSP10)

73. *Although we theorized that beliefs about the fairness of the status system play a causal role in the processes observed here, we measured individual differences in endorsement of SJBs rather than manipulated them experimentally. Thus, it is possible that the effects observed may be the result of some other covarying factor.* (JPSP10)

In all of the examples, it is clear that the writers express caution in speculating about the possible causes for the obtained results and that the use of modals signals a reduced level of certainty they are prepared to attach to their claims. In sentence (73) this is even reinforced by the presence of the additional epistemic device, viz. the epistemic adjective *possible*, which adds a further element of caution in the claim.

A writer's cautious stance conveyed by *may* can be reinforced by its co-occurrence with other lexical devices, such as the tentative discourse verb *suggest* or *indicate*, as shown in the following example:

74. *Such a finding may suggest that observers create their own contexts to understand why a target is expressing embarrassment. Alternatively, it is possible that observers have an automatic mental association between the embarrassment expression and perceptions of prosociality.* (JPSP3)

Requirements for psychology writers' hedged stance particularly in relation to the interpretation of the research findings may be illustrated by one of my informants' comments:

"As scholars, we are taught that we have to be very careful and not jump to hasty conclusions. When it comes to psychology, the words such as *prove* are avoided because you can never conduct all possible research which can prove that something is the case. There can always be another research that can challenge your

conclusions. As a matter of fact, you can never prove anything in psychology, perhaps in mathematics, but not in psychology…" (Interviewee 2/Interviewee 3)

The subjective epistemic evaluations signaled by the use of the modal may frequently occur in the moves concerned with the indications of the limitations of the research, as shown in example (75). Writers may openly disclose their uncertainties concerning various aspects of the research which precludes expressing their judgments in a more assertive manner. This may be illustrated in the last sentence (76) of the following passage:

> 75. *Second, the assessments of school engagement used in the present study may introduce some measurement challenges. For example, some of the items indexing behavioral school engagement reflect deficit thinking. In addition, we assessed youth perceptions of their status as members of the school as an approximation of emotional engagement.* (76) *These approaches may limit our ability to accurately measure these two constructs.* (DP10)

While the use of *may* in the examples such as above is concerned with signaling writers' reservations towards the propositional validity (Hyland, 1996b), *may* can also be used to soften the force of a writer's claim, which ties the use of the modal with the interpersonal reasons (Mauranen, 1997). As previously discussed, the link between the modal devices and politeness has been well-established in previous literature, including research on academic writing (Perkins, 1983; Myers, 1989; Vihla, 1999). In such instances, a writer's motivation for the use of the modals may not only be associated with the indications of the probability of a claim[77] but also with adopting a particular stance towards the readers (Myers, 1989). For example, in example (77), the use of the modal may be interpreted as a sign of modesty and desire not to boost the importance of one's findings, while at the same time highlighting their potential benefits.

[77] With respect to example (77), this may be attested by the following paraphrase: '*it is possible that these findings can/will be particularly useful in...*'

77. *These findings may be particularly useful in clinical and therapeutic settings in helping health practitioners to better tailor couples therapy to incorporate aspects of attachment theory (e.g., Wamvik-boldt, 1999).* (DP6)

As shown in examples (72), (73) and (76), in the Results and Discussion sections the use of *may* often concerns a writer's reference to various aspects of his or her research, rendering thus the subjective readings of the epistemic evaluations (Nuyts, 2001). In the Introduction section, however, the use of the modal is particularly (though by no means exclusively) connected with reporting on the assumptions held not only by a writer but clearly accessible to other members of the given discipline. For instance, in examples (78-79) below it is evident that the writer is not expressing his or her own epistemic judgments on the subject matter but is rather referring to a common epistemic evaluation which he or she most likely agrees with. In that sense, the use of *may* is likely to be interpreted as an intersubjective epistemic evaluation (Nuyts, 2001):

78. *Objectification theory argues that individuals who self-objectify focus their attention on an ideal physical appearance, which they are unable to attain and which may be linked to negative outcomes such as disordered eating (Fredrickson & Roberts, 1997).* (DP7)

79. *Experiences of contempt and disgust also both predict tendency to withdraw from rather than confront an antagonistic social group (Mackie et al., 2000), and both may be associated with prejudice toward the most stigmatized, dehumanized minorities, such as the homeless or drug addicts (Fiske et al., 2002; Harris & Fiske, 2006; Hodson & Costello, 2007).* (JPSP4)

As can be seen in the occurrences above, subjectivity and intersubjectivity of the epistemic evaluations are clearly not inherently present in the modal themselves, but are rather a matter of the contextual clues (Nuyts, 2001). In examples such as (72-73) the explicit presence of the personal pronoun in the surrounding context makes it clear that the writers are expressing their personal epistemic judgments. By contrast, in examples (78-79), the

contextual clues as well as the non-integral citations trigger a rather intersubjective character of the whole epistemic evaluation.

As previously noted, one of the common epistemic uses of *may* is associated with *that*-extraposed clauses, as shown in:

> 80. *Although contempt was clearly linked to incompetence in Study 3, it may be that this is only one of a number of necessary eliciting appraisals for it.* (JPSP4)

As will be shown throughout the subsequent analysis, the extraposed *that*-clause is a particularly salient means of conveying epistemic evaluations by Engcor writers and thus merits closer attention, particularly because the congruent pattern in also salient in the Croatian sub-corpus. According to Biber et al. (1999), the extraposed *that*-clause involves the main clause that reports on an attitude, stance, or thought, while the subject of the main clause may be a human agent, as well as a verbal or adjectival predicate. This type of clauses has been widely recognized as an important means in conveying stance towards the propositional content in academic writing and the centrality of this syntactic strucutre has been attested by a number of studies on academic discourse (Biber et al., 1999; Hewings & Hewings, 2002; Hyland & Tse, 2005). Thus, Hyland and Tse (2005) argue that, the evaluative *that*-clause "allows the writer to thematize the evaluation, making the attitudinal meaning the starting point of the message and the perspective from which the content of the *that*-clause is interpreted" (p. 124). In addition, *that*-extraposition provides writers with a choice of making an evaluative source explicitly visible or invisible. Concealing the epistemic source may be achieved by different means, such as the use of impersonal *it*, as shown in example (80). It is clear that the writer is providing a personal judgment on the subject matter, which is supported by the surrounding contextual clues (i.e. Study 3 refers to the study conducted by the writers of the given article). The choice of the impersonal modal construction merely disguises a writer's presence, making the evaluation seem more

objective (Yang et al., 2015). In Engcor, the occurrences of the modal such as (80) are particularly frequent in the Discussion section and they are commonly used in writers' evaluations of their research, which is one of the main functions the *that*-extraposed clauses perform in academic writing (Hyland & Tse, 2005).

However, on a more general note, Hyland (1998) seems to be right in suggesting that drawing a clear dividing line between what is strictly a writer's subjective belief or a reference to the commonly shared assumptions may in some cases be notoriously difficult to assess. This might be a challenging task in a discourse such as academic in which impersonal expressions abound and the sources of epistemic judgment can be disguised in different ways. In the context of the corpus-based research, such as the present one, a precise identification of the source of an epistemic judgment would require an interrogation of every single RA writer about the (inter)subjective status of every single occurrence of the modal use in his or her writing, which, admittedly, would be hardly possible to achieve. Against this background, the notions of (inter)subjectivity of epistemic evaluations of all epistemic devices are referred to but not used as a criterion to distinguish between different types of epistemic evaluations and accordingly different types of hedges. This does not invalidate the present analysis which is based on the premise that a hedge is a linguistic device which indicates a lack of commitment to the propositional content, regardless of whether it refers strictly to a writer's evaluation or to the shared evaluations to which the writer, in the absence of the indicators of otherwise, most likely subscribes.

4.1.1.2 Discussion of the corpus findings for MIGHT. As can be seen in Figure 3, compared to *may*, both *might* and *could* were used significantly less frequently in Engcor, showing almost identical frequency of epistemic occurrences. The highest frequency of *might* was recorded in the Discussion (n/1000 = 0, 95), while some lower frequency of occurrences was found in the Introduction section (n/1000 = 0, 61). The frequencies of the modal in the middle RA sections were significantly lower by comparison (cf. Table A1, Appendix 12).

Might is considered to be the typical modal for expressing epistemic possibility, allowing for the same paraphrase as epistemic *may*: 'it is possible that…/perhaps/maybe' (Coates, 1983). It has been commonly regarded as a more tentative or indirect form of *may* in conveying epistemic possibility (Perkins, 1983; Palmer, 1990; Hyland, 1998; Trbojević-Milošević, 2004; Carter & McCarthy, 2006). For example, Palmer (1990) points out that *might* is used exactly as *may*, though indicating a little lesser degree of certainty than the latter.

However, previous research indicates that at least in conversational English *might* has been gaining in autonomy, and moreover overriding *may* as the main exponent of epistemic possibility (Coates, 1983). In addition, the findings of some corpus-based studies both in American English (Leech et al., 2009) and British English (Coates, 1983), point to the absence of any significant difference in the use of epistemic *may* and *might*, the two being often interchangeable. Some evidence from Engcor might support these findings, such as example (81) in which the writer's choice of *might* could be regarded as a matter of a stylistic preference or avoidance of the repetitive use of *may*:

> 81. *In turn, it may arguably be the case that students from wealthier families might be better behaved in school but may not necessarily feel better about school than do youth from less affluent families.* (DP10)

However, though in most epistemic occurrences of *might* in Engcor its use could be replaced by *may* without any noticeable difference in meaning, it might be reasonably assumed that writers do have a reason for opting for one rather than the other, which in case of *might* is most likely motivated by a desire to underpin the tentativeness of the claim. With respect to the present findings, this may be further supported by a discrepancy in the frequency between the two modals, which would probably be smaller if the two were interchangeable (cf. Table A1, Appendix 12).

Though *might* is predominantly used for expressing epistemic possibility, it may also be used to express non-epistemic meanings.[78] Coates (1983) labels such uses of *might* the instances of root hypothetical possibility, whose frequency is significantly lesser as compared to its epistemic uses. According to Coates (1983), the root meaning of *might* can be paraphrased as 'it would be possible for x...', as shown in:

> 82. *We argue that the wealth of theory and research in this literature might be used to extend and inform our understanding of how people navigate socially available information to accomplish their goals.* (JPSP1) (= it would be possible for (x) to use the wealth of theory and...)

In the instances such as (82), the use of *might* is not concerned with a writer's epistemic judgments or beliefs but is likely motivated by polite reasons (Coates, 1983; Mauranen, 1997). It is obvious that the writer is recommending a course of action to other scholars and inciting them politely to use the existing knowledge and enhance understanding on a subject matter. However, the use of the modal makes this prompt less direct and reduces the possibility that the readers will find it intrusive. Such uses of *might* are common in the Discussion section, particularly in the move concerned with the recommendations and implications for further research, as illustrated in the following example:

[78] A further non-epistemic reading of the modal refers to it being the past form of dynamic *may*.

83. *Future research might examine whether observers find embarrassed targets more attractive and also empirically establish that when people wish to attract or impress a potential mate, they increase their tendency to display embarrassment.* (JPSP3)

It is worth noting that the choice of an inanimate subject (i.e. *research*) might be interpreted as a further means of avoiding making direct suggestions, which according to Brown and Levinson's model of politeness (1987) represent intrinsic face threatening acts for a hearer. By shifting the focus to the research (rather than the scholars) as well as the choice of the tentative form of the modal verb (Palmer, 1990), the writer is merely suggesting a possible course of action, without the risk of violating disciplinary expectations in conveying polite attitudes.

In order to ensure that the analysis included the epistemic occurrences of *might* only, all the sentences containing the modal were extracted from Engcor sub-corpora and classified according to the presence or absence of the epistemic reading. The obtained results showed **83%** of epistemic and **17%** of non-epistemic occurrences of *might*, which is generally in line with the well-established status of *might* as an epistemic modal (Coates, 1983; Palmer, 1990; Vold, 2006a).[79]

According to Coates, *might* is primarily used to signal a subjective epistemic evaluation, whereby a writer shows a lack of full commitment to the propositional content. The subjective readings of *might* are especially prominent in the Discussion section, which is expected given that in this section writers mostly employ a tentative and speculative language, in particular when engaged in the interpretations of various aspects concerning their research, as in:

[79] As a way of illustration, Šinkūnienė's (2011) findings pointed to 60% of epistemic uses of *might* in the corpus of linguistic articles, and 76% in the corpus of medical articles.

84. *Given the relationship that we have observed between political ideology and stereotype endorsement (Study 3), it is possible that when it comes to inferring personality traits on the basis of indirect environmental cues, liberals' greater need for cognition might lead them to rely on these cues less than conservatives, in part because they would be more likely to doubt that such cues necessarily serve the interest of making an accurate judgment.* (JPSP9)

As can be seen in example (84), the writers are clearly speculating about the possible reasons which might underlie the behavior of their research subjects and the choice of the tentative form of the modal is a clear signal of a reduced level of commitment they have chosen to attach to their claim.

The Engcor findings also show the occurrences of harmonic combinations, i.e. co-occurrences of *might* and other hedging expressions (e.g. *seem*), which increase the tentativeness of a writer's claims, as in:

85. *It might not seem intuitively obvious how political ideology would relate to the process of categorizing sexual orientation.* (JPSP9)

However, not all harmonic combinations are used for the same purpose. For example, though indicating epistemic possibility, the use of the harmonic cluster consisting of *might* and the adverb *well* may serve to signal a higher degree of a writer's confidence in the proposed claim, indicating thus the epistemic likelihood rather than possibility, as attested by previous research (Coates, 1983; Hyland, 1998; Trbojević-Milošević, 2004). Example (86) may serve to illustrate the point:

86. *With regard to emotional engagement, a student's feelings toward the school, teachers, and schoolmates might be well different.* (DP10)

4.1.1.3 Discussion of the corpus findings for COULD. The epistemic use of *could* showed a similar tendency of distribution across the RA rhetorical sections as *might*, whereby the highest frequency of occurrences was recorded particularly in the Discussion section (n/1000 = 1, 10), followed by the Introduction section (n/1000 = 0, 48) (cf. Table A1, Appendix 12). The epistemic uses of the modal were negligible in the remaining two sections, which is expected given that writers in these sections primarily deal with the descriptive accounts of the research stages. Like *might*, the surface forms of *could* were found in both epistemic and non-epistemic uses in Engcor. The findings point out that the latter mostly refer to the past forms of dynamic *can*, as shown in the following example:

> 87. *However, the data employed in that study were cross-sectional and could not address questions of directionality.* (= it was not possible (for us) to address/we were not able not address....) (DP9)

Congruent to *might*, non-epistemic uses of *could* may be found in the instances where a writer is concerned with offering tentative or polite suggestions rather than expressing epistemic evaluations (Mauranen, 1997). As Coates (1983) observes, such root uses of *might* and *could* are often interchangeable, which can be attested by the Engcor findings, as in example (88) below:

> 88. *Future research could examine other mechanisms that may carry this association.* (JPSP2) (= might examine)

Generally, the non-epistemic uses of *could* may be associated with a writer's tentative stance which might be motivated by awareness that there may be alternative views on the subject matter. In such uses *could* (but also *might*) often co-occurs with the verbs such as *describe, argue, say*, etc. Coates (1983) discusses the use of the given verbs with reference to *might*, but the Engcor data show that *could* can be used in the same manner, as attested by the following example:

89. *In many cases, outcomes at the high end of adversity appear more negative than those at zero adversity, and some curves could be described as more J-shaped than U-shaped…* (JPSP8)

Despite the almost identical frequency rates of the epistemic uses of *could* and *might*, the findings show that the ratio of the epistemic meanings of *could* as compared to its non-epistemic meanings is considerably lower than is the case with *might*. More specifically, the analysis showed **58%** of epistemic and **42%** of non-epistemic occurrences of *could*, which is generally in line with previous research pointing to the less salient status of epistemic *could* as compared to *might* (Coates, 1983; Hoye, 1997; Vold, 2006b; Šinkūnienė, 2011).[80]

As previously noted, the epistemic use of *could* can be paraphrased by the following gloss: 'it is (tentatively) possible that…/perhaps' (Coates, 1983). According to Coates, the modal lends itself to conveying tentative epistemic possibility and in that respect may be interpreted as an alternative to epistemic *might*, as indicated in the following example:

90. *Thus, ideological differences in the use of gender inversion cues could be attributable to differences in social contact. To investigate this possibility, we measured prior contact experiences and assessed the extent to which these accounted for differences in the use of stereotypical cues*. (= might be attributable to...) (JPSP9)

Similarly to *might*, epistemic *could* is frequently encountered in harmonic combinations with other epistemic devices. Such chains of hedges are frequently encountered in the passages in which writers engage in subjective assessments of a state of affairs in which cautious language is particularly salient, as in:

91. *We do assume, however, that prejudice could play an important role in the application of stereotypes once categorization has already taken place.* (JPSP9)

[80] For instance, Šinkūnienė's (2011) findings showed 33% of epistemic occurrences of *could* in the corpus of the linguistic articles and 34% of the occurrences in the medical texts. However, there are studies which point to the opposite trend in terms of the frequencies of the two modals (cf. Hyland, 1998).

To sum up, the epistemic use of the modal verbs outlined here primarily indicates the non-categorical status of the statements, regardless of whether they refer to the shared assumptions generally held by the members of the given discourse community or whether they are signals of a writer's subjective epistemic judgments. With respect to the latter, in signaling a lack of full warrant for the proposed claims, writers mark their provisional nature and acknowledge the extent to which these may be considered as accurate. With respect to the use of the individual modals, the present findings point to the saliency of *may* in conveying epistemic possibilities. The overall frequency of *may*, which is strikingly higher as compared to that of *could* and *might*, may be accounted for by the fact that it is considered to be semantically the most neutral modal (Palmer, 1990). Therefore, it lends itself to uses in a range of different non-factual contexts in which, as Palmer notes, the use of other epistemic modals with a more specific semantic domain might be rather inappropriate.

4.2 Epistemic modal verbs in Crocor

As previously outlined, modality and its linguistic exponents have not received systematic accounts in Croatian grammars, so generally we have little information on the forms and functions of modal devices in Croatian. The modal verbs are not an exception in that respect. Silić and Pranjković (2005) provide a very general and brief account of the modal verbs in Croatian. According to the authors, modal verbs are treated as verbs of incomplete predication (Cro. *suznačni glagoli*) which do not denote but modify a certain state of affairs. As such, they are followed by a verbal complement which is most frequently an infinitive or less frequently a *da*-clause[81] (Kalogjera, 1982). As Silić and Pranjković (2005) observe, modal verbs are used to establish a modal relation between an action denoted by a full lexical verb and a speaker. This relation may relate to the notions, such as volition, request, obligation, etc. Though not dealing with the semantics of the modal verbs, the authors distinguish between the modal verbs in a narrower and broader sense. The former encompasses the verbs which from a cross-linguistic perspective may be considered as the core modal verbs, including the following *moći (can/may), morati (must), htjeti (will), smjeti (may), trebati (should),* etc. are generally used to mark a relation to a state of affairs. The modal verbs in a broader sense have a more specific semantics, and include the verbs which may denote the concepts such as cognition (*misliti, pomišljati*), emotional states (*bojati se, voljeti*), willingness (*namjeravati, nastojati*), etc.[82]

As previously mentioned, the concepts of epistemic and dynamic meanings of the Croatian modal verbs can be found in Kalogjera's (1982) cross-linguistic survey of the English modals and their Croatian equivalents. Under this account, epistemic modality

[81] Silić and Pranjković (2005) label it as *da + prezent* construction (conjunction *da* + present tense).

[82] The English equivalents of the given verbs in the rank of order may be suggested as follows: *think, consider, fear, like, intend to, attempt.*

encompasses the notions such as certainty, possibility, and prediction, each of which is illustrated by the Crocor examples further below.

> 92. *Dyer je 1973. zagovarao upravo ovu pretpostavku, navodeci da lijeva hemisfera ne može ignorirati verbalne informacije koje prima i koje stvaraju interferenciju, te stoga mora doći do interferencije (prema Hughdahl i Franzon, 1985.).* (SP1)

In example (92), the meaning of the modal *morati* may be paraphrased as follows: 'it is necessarily the case that interference occurs.' In other words, a writer expresses a high degree of certainty or conviction with respect to the state of affairs taking place. A strong conviction marked by the modal is the result of a writer's assessment that the evidence for his or her epistemic judgment (as indicated by the underlined noun *pretpostavka*) is so compelling that the given conclusion must be necessarily the case. In addition to *morati*, a high degree of commitment to the propositional content may be signaled by the impersonal form of the future tense of the auxiliary *biti*, as in:

> 93. *Prije će biti da je zbog visoke povezanosti varijabla kontakta i diskriminacije (i to veće nego u uzorku manjine), varijabla diskriminacije "odnijela" i dio varijance kontakta u ukupnom određenju stava prema socijalnoj integraciji.* (DI2)

Silić and Pranjković (2005) note that in addition to its core meanings of marking futurity, the Croatian Future I tense (Cro. *futur prvi*) can be used for conveying modal meanings. In particular, this secondary use of the future tense relates to the indications of a speaker's reluctance to the full commitment to the factuality of the claim, as attested by example (93).

The occurrences such as (92) and (93) are notoriously rare in Crocor, which may suggest that asserting the claims with a high degree of confidence, at least with respect to the use of the given verbs, is much less salient than conveying a reduced degree of conviction to the proposed claims. Most generally, this seems to be in line with previous research which suggests that boosting is a much less prominent rhetorical strategy in academic writing as

compared to hedging (Hyland, 1998; Hyland, 2005a, 2005b). In addition to the above indicated verbs, the meaning of epistemic certainty may be conveyed by the modal *trebati*, yet of a lower degree as compared to *morati*. Thus, in the following sentence:

> 94. *Zanimljivo, nerestriktivne žene kojima je manje važan emotivni aspekt odnosa ipak su osjetljivije na emocionalnu nevjeru, čak i kada se usporede s restriktivnim muškarcima kojima bi emocionalni aspekt odnosa trebao biti važniji.* (DI6)

the writer expresses a reasonable assumption with respect to the state of affairs being true, and in that sense the use of epistemic *trebati* may be regarded as equivalent to the epistemic readings of *should* (Palmer, 1990). As can be seen, the tentativeness of the claim is reinforced by the conditional form of the modal, which is indeed the only form in which the epistemic sense of *trebati* has occurred in Crocor. Similarly to the above verbs, there were only few occurrences of the epistemic use of *trebati* in the whole Croatian corpus, which suggests its rather marginal status in conveying higher degrees of writers' conviction with respect to the propositional content.

Finally, the meaning of epistemic possibility, which is the core modal concept in the present study, is associated with the use of the single modal, viz. *moć*i. Congruent to the epistemic readings of its English equivalent *may*, the epistemic meaning of *moći* can be paraphrased as: 'moguće je da/postoji mogućnost da/možda'. Example (95) may illustrate the epistemic reading of the given modal:

> 95. *Iako ima nalaza koji pokazuju da postoje određene spolne razlike u atribucijskim stilovima, istraživanja na studentskim uzorcima uglavnom ih nisu potvrdila. Razlog može biti taj što se u istraživanjima koja ispituju atribucijske stilove studenata, za procjenu atribucija koriste zadaci koji su i studentima i studenticama jednako važni (Campbell, 1999).* (PT6) (= moguće je da je razlog taj…)

It is worth noting that the Crocor data show that the most typical instance of the epistemic reading of *moći* is its co-occurrence with the infinitive form of *biti*. In addition to its

indicative form, the conditional form of *moći* is also used to convey the meanings of epistemic possibility, however of a more tentative kind.[83] The epistemic meaning of the conditional form of *moći* may be paraphrased by the same gloss as its indicative form, as shown in the example below:

> 96. *Nadalje, individualne razlike u ljubomori unutar svakoga spola mogle bi biti u vezi s reproduktivnim strategijama, koje se također mogu objasniti adaptivnim mehanizmima nastalim tijekom evolucijske prošlosti.* (DI6) (= moguće je da/postoji mogućnost da/možda su u vezi)

A tentative form of *moći* most likely suggests a writer's intention to convey a lower degree of commitment to the propositional content, as compared to the indicative form of the modal. In that respect, it corresponds to the English modals *could* and *might*. In line with the overall aim of the study and the approach adopted with respect to the English modals, the present analysis encompasses only the modal *moći*, in both its indicative and conditional form.

4.2.1 Overall findings of the epistemic modal verbs in Crocor. The overall frequencies of the epistemic uses[84] of the indicative and conditional forms of *moći* are presented in Figure 4, while the raw and normalized frequencies can be found in Appendix 12. As can be seen, with respect to the IMRAD structure, the highest frequency of the two forms of the modal was recorded in the Discussion (n/1000 = 1, 85) and slightly lower in the Introduction section (n/1000 = 1, 67). Such distribution is expected given that in these two sections writers mostly engage in reporting on generally held epistemic judgments or in

[83] The Crocor data point to the use of modals in only one type of the Croatian conditional, viz. Kondicional Prvi (Silić & Pranjković, 2005). For the sake of convenience, the term 'conditional' is used in the subsequent discussion.

[84] Congruent to the procedure established in Engcor, the present findings comprise the frequencies of pure epistemic readings of *moći* and the 'merger' cases.

providing their own epistemic evaluations. By contrast, the use of the two forms of the modal was less salient in the middle RA sections, though showing a significantly higher frequency of occurrences in the Results (n/1000 = 0, 44), as compared to the Method section (n/1000 = 0, 12). With respect to the differences in the distribution of the two forms, the overall findings point to the overall higher frequency of the indicative (n/1000 = 0, 72), as compared to the conditional from of *mоći* (n/1000 = 0, 51). As can be seen, the occurrences of the indicative *mоći* showed a higher frequency of occurrences in all RA sections except in the Method section. The lowest discrepancy in the frequencies of the two forms was recorded in the Introduction section, with the indicative being used slightly more frequently (n/1000 = 0, 84) than the conditional form (n/1000 = 0, 82). The highest discrepancy in the use between the two forms was found in the Discussion section, where indicative *mоći* showed 1, 20 of occurrences per 1000 words, as opposed to its conditional form with 0, 64 of occurrences per 1000 words. The section that follows provides a more detailed account of each form of the given modal.

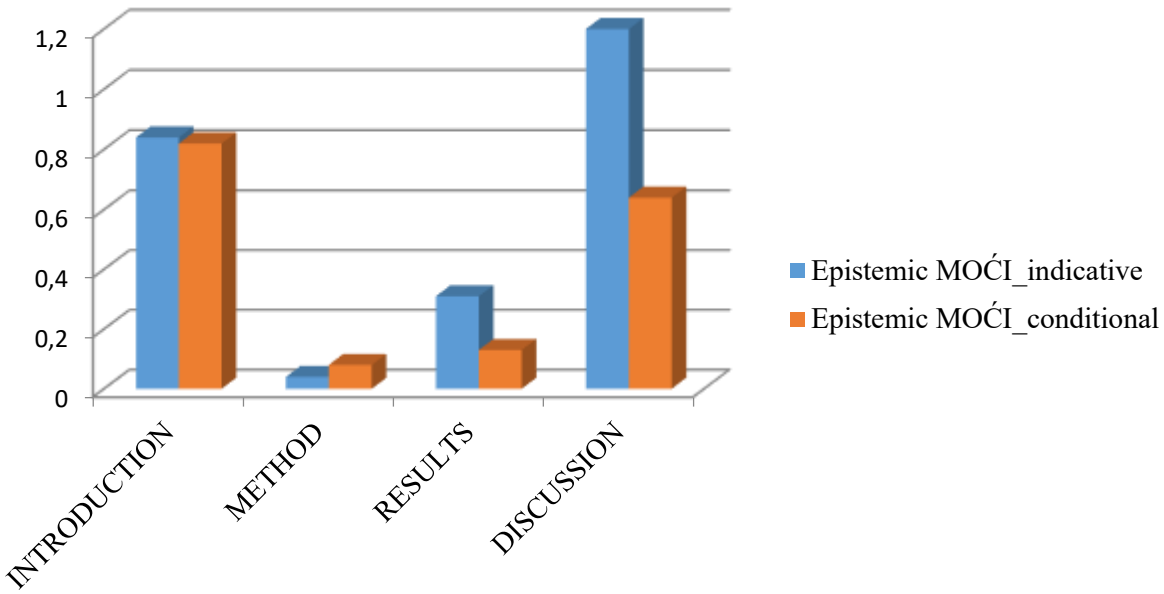

Figure 4. Distribution of indicative and conditional forms of *mоći* across IMRAD

4.2.1.1 Epistemic MOĆI_indicative. The Crocor findings show that *moći* encompasses the congruent scope of the core modal meanings identified for *may* in Engcor. Prior to the outline and discussion of the corpus findings, each of the distinctive meanings of *moći* is exemplified and discussed further below.

In addition to its epistemic use exemplified in (95), *moći* can be used to realize different types of dynamic modal meanings. One of it relates to the meaning of neutral or circumstantial possibility (Palmer, 1990). This use of modal *moći* is frequently found in the impersonal forms, as shown in the following example:

> 96. *Uloga PA i NA u taksonomiji emocionalnih stanja može se usporediti s ulogom dimenzija petofaktorskoga modela u taksonomiji crta ličnosti (Watson i Clark, 1992.a).* (DI4) (= moguće je usporediti/ (za X) je moguće usporediti)

As can be seen, the dynamic meaning of the modal can be paraphrased by the following gloss: 'moguće je/ (za x) je moguće + infinitive …'. Such dynamic occurrences of *moći* parallel the previously discussed dynamic use of English *may* and *can* in that they frequently occur in the impersonal form and are associated with the use of general statements in which the agent is left unspecified (Radden & Dirven, 2007).

Further dynamic uses of *moći* can be associated with the meanings of existential dynamic modality, which can be illustrated by the following example:

> 97. *Ispitna anksioznost definira se kao složeni konstrukt koji uključuje kognitivne, afektivne, fiziološke i ponašajne reakcije na situacije procjene (Hong, 1998). Može se javljati kao stanje ili kao osobina ličnosti (Spielberger i Vagg, 1995).* (PT3)

The writer is clearly not providing his or her subjective epistemic judgment on the possible occurrence of the given event, but is rather referring to the factual state of affairs which may occasionally occur (Facchinetti, 2003).

An additional dynamic reading of *moći* can be associated with the ability sense and can be paraphrased as follows: *'biti u mogućnosti + infinitive'*. Example (98) illustrates the dynamic sense of the modal which points to the agents' intrinsic possibilities, and as such corresponds to the ability reading of English *can* rather than *may* (Radden & Dirven, 2007).

> 98. *Specifičnost dijabetesa jest da oboljeli u velikoj mjeri mogu kontrolirati vlastito stanje, i to tako da reguliraju metaboličke procese, koji se obično odvijaju automatski, i na taj način utječu na daljnji razvoj bolesti.* (= u mogućnosti su kontrolirati) (DI7)

The past form of the dynamic meaning of *moći* (i.e. its ability reading) allows for the same paraphrase 'biti u mogućnosti', which can be illustrated as follows:

> 99. *Na temelju rezultata ranijih istraživanja mogli smo postaviti samo sljedeće hipoteze: majke će izvijestiti o većoj važnosti, ali i manjem zadovoljstvu roditeljstvom od očeva …* (SP4) (= bili smo u mogućnosti postaviti)

In addition to the occurrences which show the distinctive epistemic and dynamic meanings of *moći*, the Crocor findings point to the cases in which the intended meaning of the modal is rather blurred (Kalogjera, 1982). In that sense, Croatian *moći* shows the congruent type of the overlap between the epistemic and dynamic readings (i.e. merger) identified for English *may*. Example (100) may serve to illustrate the point:

> 100. *Ovakav način odgovora ne iznenađuje, jer obje vrste nevjere mogu izazvati snažne emocije, koje mogu maskirati razlike u ljubomori između i unutar svakoga spola (Edlund, Heider, Scherer, Farc i Sagarin, 2006).* (DI6)

If we take a look at the meaning of the first instance of *moći*, we may find that both epistemic and dynamic readings are equally compatible, as attested by the following paraphrases: [85]

[85] The same overlap of the epistemic and dynamic reading is also evident in the second instance of *moći*.

a) moguće je da/možda obje vrste nevjere izazivaju snažne emocije = EPISTEMIC READING

b) obje vrste nevjere su u mogućnosti izazvati snažne emocije = DYNAMIC READING

The epistemic reading of the modal in example (100) can be interpreted in terms of signaling a writer's epistemic judgment about the possibility that both types of jealousies evoke strong emotions. On the other hand, the dynamic reading of the modal points to some inherent features of the inanimate subject (i.e. jealousy) which makes it possible for the strong emotions to occur. However, the distinction between epistemic/dynamic modal readings is neutralized and, as previously outlined with respect to the congruent uses of English *may*, a possible ambiguity of the modal will probably go unnoticed for a reader and pose no comprehension problems (Nuyts, 2001).

In line with the procedure established with respect to the account of the modal meanings of *may* in Engcor, the distinctive meanings of indicative *moći* were classified into three categories: epistemic, dynamic, and merger and subjected to the frequency analysis. The overall frequencies point to the prevalence of the **dynamic** uses of *moći* in Crocor, accounting for **82%** of its occurrences. Pure **epistemic** instances of *moći* were notoriously rare, showing only **5, 4 %** of the occurrences, while **12, 5 %** of the instances could be interpreted as the instances of **mergers**. While the subsequent discussion focuses primarily on the use of the epistemic instances of *moći*, attention will be drawn to some special cases of the dynamic uses of *moći* which may be interpreted as the instances of hedges in the present corpus.

4.2.1.1.1 Discussion of the corpus findings for epistemic MOĆI_indicative. As can be seen in Figure 4, the highest frequency of the epistemic use of *moći* is recorded in the Discussion section (n/1000 = 1, 20). The use of the modal is prevalently associated with the writers' subjective interpretations of their research findings. The following examples illustrate the typical uses of the modal in its epistemic sense:

> 101. *Osim ovih metodoloških razloga moguće je da su uzrok takvim rezultatima i neke kulturalne specifičnosti. Neki od navedenih činitelja mogu biti u osnovi i ovdje dobivenih rezultata koji ne upućuju na važnost uloge profila sličnosti objašnjenju bračne kvalitete i izraženosti psihičkih simptoma.* (PT7)
>
> 102. *Doživljaj pretjerane roditeljske kontrole može se odraziti na neodgovarajuće ponašanje prema vlastitoj djeci koja percipiraju veće odbacivanje od strane svojih majki. Sukladno ovoj pretpostavci je i podatak o negativnoj povezanosti brige koju su percipirale majke i odbacivanja koje percipira adolescent.* (PT1)

In the first paragraph, a writer estimates possible causes of the obtained results, which is signaled by the choice of the modal particle *moguće* in the first sentence and followed by the use of the modal *moći* but also the lexical verb *upućivati* in the second sentence. The epistemic reading of the modal verb in the second sentence may be paraphrased as follows: 'it is possible that some of the indicated factors underlie the findings obtained.' The cluster of hedging devices in example (101), including the modal verb, all signal that a writer refrains from attaching a higher degree of certainty to the proposed claims, clearly indicating their speculative character.

Example (102) may be interpreted against similar lines. Here the epistemic reading of the modal is made explicit through the use of the signaling noun *pretpostavka* in the second sentence, which anaphorically summarizes the content of the previous clause. As already discussed with respect to the Engcor findings, harmonic clusters of the modal devices, such as those in examples (101) and (102) are frequently encountered in the

Discussion sections, which is in accordance with its previously discussed rhetorical functions.

Similarly to their English counterparts, Croatian writers may also openly acknowledge that firmer conclusions regarding their research findings are impossible to be drawn, and that the specifics of the findings are only suggestive rather than conclusive, which can be nicely seen in the example (103) below:

> 103. *Iako ne možemo donositi zaključke o uzročno-posljedičnim vezama, dobivene povezanosti mogu upućivati na nepovoljne posljedice djelovanja ispitne anksioznosti na akademsko postignuće, kao i obrnuto.* (PT3)

It is worth drawing attention to the fact that the absence of the modal would make the whole statement more assertive, suggesting thus a writer's higher degree of certainty in the obtained results. This can be attested by the following alternation of the original sentence:

> 103.' *Iako ne možemo donositi zaključke o uzročno-posljedičnim vezama, dobivene povezanosti upućuju na nepovoljne posljedice djelovanja ispitne anksioznosti na akademsko postignuće, kao i obrnuto.*

By using the modal, a writer is only implying a possibility that the given state of affairs is true, but leaving it open for alternative interpretations to be valid as well. The Crocor findings show a particular tendency of *moći* to co-occur with the verb *upućivati*, most notably in the rhetorical moves concerned with the interpretations of the research findings, as is the case with example (103). In addition, the given example may serve as an exemplary case of a distinction between dynamic/epistemic readings of the given modal, each exhibited by the two respective uses of *moći*. The following paraphrases may illustrate the point:

Moći_1= Nismo u mogućnosti donositi zaključke (Engl. We cannot/We are not able to draw conclusions)

Moći_2 = Moguće je da dobivene povezanosti upućuju na… (Engl. It is possible that the obtained correlations point to/imply…)

With respect to Moći_2, though the contextual clues make the epistemic reading of the modal most likely here, one cannot exclude the possibility of its dynamic reading, suggesting the inherent capacities of the subject, though the epistemic reading presumably prevails in this case. However, in example (104), a distinction between the epistemic and dynamic reading of the modal is less straightforward, pointing to the typical merger cases of the modal *moći*:

> 104. *Priklanjamo se stajalištima da je rizično i društveno neprihvatljivo ponašanje kontinuum (Koller-Trbović, 2004), te da usmjeravanje isključivo na ekstreme može prenaglasiti neke razlike.* (PT9)

In other words, the reading of the modal in (104) may be interpreted as:

a) it is possible that the sole focus on the extreme cases may overemphasize some differences or

b) it is possible for this procedure (i.e. the sole focus on the extreme cases) to overemphasize some differences/the sole focus on the extreme cases can overemphasize some differences

It is interesting to note that the blurred relation between the two respective modal meanings may be used strategically by the RA writers, allowing them to remain distant from the categorical claims and thus avoid a risk of overstatements (Hyland, 1998).

The use of the epistemic modal *moći* in the Introduction section is particularly associated with the intersubjective epistemic evaluations. This is expected given that in this section writers provide the theoretical and empirical background against which their research is situated so references to the commonly held disciplinary assumptions or reports

on those attributed to the specific scholars are typically encountered in this section. Examples (105) and (106) may serve to illustrate the point:

105. *Također postoje istraživanja koja pokazuju da su žene sklonije i uspjeh i neuspjeh atribuirati eksternalnim uzrocima (Rutter, Caspy i Moffitt, 2003), što sugerira nižu percepciju kontrole nad uzrocima uspjeha i neuspjeha, koja također može biti jedan od mogućih mehanizama spolnih razlika u depresivnosti.* (PT6)

106. *Benjamin i sur. (1981.) smatraju da zabrinutost o kojoj izvještavaju visoko anksiozni studenti nije samo osobna karakteristika nego može biti posljedica i neadekvatno usvojenoga znanja.* (DI10)

4.2.1.2 Epistemic MOĆI_conditional. Congruent to the English modal *might*, the conditional form of *moći* may denote both epistemic and non-epistemic meanings. The former is associated with a writer's judgments concerning the possibilities of a state of affairs being true, which may be attested by the paraphrase: *'moguće je da …'* The non-epistemic i.e. dynamic meaning of the conditional form of *moći* is concerned with the indications of the hypothetical possibilities, allowing for the following paraphrase: *'moguće je/bilo bi moguće + infinitive*' (Engl. it is/would be possible (for x) to).

The Crocor findings point to 57, 5% of the epistemic and 42, 5% non-epistemic uses of *moći*_conditional. The distinction between the two uses may be illustrated as follows:

107. *Naime, trebalo bi utvrditi jesu li izostavljene neke moguće aktivnosti, što bi moglo biti uzrokom javljanja klastera u kojem ispitanici na svim aktivnostima imaju ispodprosječne rezultate.* (DI1) (= moguće je da je to uzrok)

108. *Strategije samoregulacije emocija mogle bi se opisati kao aktivnosti koje imaju za cilj kontroliranje emocija koje će pojedinac doživjeti, kada će ih doživjeti te kako će ih izraziti (Gross i sur. 2006).* (SP6) (= strategije je moguće opisati/strategije bi bilo moguće opisati)

As can be seen by the respective paraphrases, while in the first sentence, a writer is concerned with expressing a tentative assumption, in the second sentence the use of the conditional merely marks the statement less assertive, whereby no epistemic evaluation is provided with respect to the propositional content. The dynamic use of conditional *moći* parallels the Root Hypothetical meanings of English *might*, as discussed by Coates (1983). As previously noted, such pragmatic uses of the modal are concerned with softening the force of claims or avoiding giving too direct suggestions and are often encountered with the verbs such *describe, call, say, ask,* etc. The Crocor findings show that similar tendencies with respect to the choice of the lexical verbs can also be found regarding the conditional form of *moći*, as attested by the example (109):

> 109. *Dakle, moglo bi se reći da ova strategija zahvaća prvu fazu samoregulacije ponašanja (planiranje), a ne aktivnu kontrolu (u trećoj fazi) korištenja vremena za učenje.* (SP6)

While the meaning of the conditional can be interpreted in the dynamic sense (= *bilo bi moguće reći*), the whole expression '*moglo bi se reći'* may be considered as a phraseological unit, the function of which is characteristically connected with the hedging purposes in academic texts (Silić, 2008). In other words, the initial position of the modal hedge enables a writer to explicitly signal that what follows is to be regarded as a tentative rather than conclusive judgment. While it is obvious that the writer is drawing a subjective inference, the impersonal form allows him or her to remain hidden as a source, and thus stay non-committal to the propositional content (Radden & Dirven, 2007).

Likewise, the indicative form of *moći* can also co-occur with the same lexical verb, as in *može se reći*. The use of the indicative *moći* is likely associated with the same hedging function as its conditional form, in that it allows a writer to make the claim less assertive, as shown in the following example:

110. *Usprkos tome, može se reći da su dobiveni rezultati slični onima koji su dobiveni u prethodnim istraživanjima (npr. Aliik i Realo, 1997.; Watson i Clark, 1992.a) te da pružaju dodatne dokaze o mogućnosti generalizacije odnosa između osobina ličnosti i raspoloženja na različite jezike i kulture.* (DI4)

The same hedging effect of the dynamic use of *moći* can be found in the co-occurrences with other lexical verbs, such as *pretpostaviti*, *smatrati*, etc. The following examples may illustrate the point:

111. *Na temelju se rezultata prethodnih istraživanja može pretpostaviti da će mladi sa sigurnim stilom privrženosti ujedno imati i višu kvalitetu privrženosti roditeljima od mladih s nesigurnim stilovima privrženosti.* (PT8)

112. *Točnije, moglo bi se pretpostaviti da je generativnost uže povezana s altruističnom i s instrumentalnom motivacijom (posebno s njezinom dimenzijom koja se odnosi na produženje obiteljske loze i ostavljanje traga za sobom putem djece), nego s fatalističnom i narcističnom*. (DI9)

In both examples the presence of the modal does not significantly change the meaning of the clause. For example, in sentence (111), the removal of the modal would yield the following: *Na temelju se rezultata prethodnih istraživanja pretposatvlja da će mladi…*

The use of the modal may be considered as a means of reducing directness of the assumption, which is in the case of the conditional form made even more tentative. In both examples writers leave open a possibility that though there are good enough reasons for assuming that something is the case, the assumptions may not necessarily hold. Commenting on this use of the modal verb one of my Croatian informants observed the following:

> "Yes, I assume but I do not want to categorically assert my assumption which would be implied without the presence of the modal." (Interviewee 4)

While both indicative and conditional form of the given modal hedge serve to decrease the intensity of the claim (Badurina, 2011), it may be argued that the hedging effect is at least

slightly reinforced by the choice of the conditional form of *moći* and that it further increases a rather reserved stance a writer has chosen to adopt.[86]

The point that remains to be accounted for with respect to the given use of *moći* concerns the syntax. As can be seen, in all of the above discussed examples (109-112), the impersonal modal expression occurs in the main clause followed by the complement clause, controlled by the conjuction *da*. More precisely, the given clauses are labeled as 'kompletivne' or 'dopumbene rečenice' in Croatian linguistic literature (Pranjković, 2001). According to Pranjković (2001), the main characteristic of this type of sentences is that the main clause contains the specific classes of verbs which denote a mental or speaking activity, feelings, volition, etc.[87] In addition to the modal verbs, the main clause may also contain semantically congruent nominal (e.g. *Postoji mogućnost da…)* or adverbial phrases (e.g. *Moguće je da…)* which function as indicators of a speaker's or another person's attitude towards the content of the following complement clause. In other words, the matrix clause subjectively qualifies the complement clause which represents the communicative core of the sentence.[88]

Turning back to the above-cited examples, it can be seen that they perfectly match this characterization, both in terms of the choice of the verbs (i.e. *reći, pretpostaviti*) and the fact that the whole modal expression in which they occur signals a writer's hedged stance towards the content of the following complement clause. In that sense, the given Croatian clauses correspond to the previously discussed English evaluative *that*- clauses, which are

[86] This assumption runs contrary to the position adopted by Silić (2006) who argues that the choice of the indicative vs. conditional form of the modal is synonymous not only in the phrasal units of this kind but in the scientific style generally.

[87] Pranjković (2001, p. 64) lists the following verbal groups: Verba dicendi, sentiendi, putandi, affectuum, voluntatis, etc.

[88] "Glavna surečenica ne sadrži posebnu obavijest, nego je zapravo svojevrsna subjektivna modifikacija zavisne surečenice." (Pranjković, 2001, p. 65)

particularly salient means for conveying epistemic and attitudinal stance in academic writing (Hyland & Tse, 2005). As the remainder of the corpus analysis will demonstrate, as far as the present Croatian corpus is concerned, the indicated Croatian clause may be considered as sharing the congruent status.

4.2.1.2.1 Discussion of the corpus findings for epistemic MOĆI_conditional. The Crocor findings show that the highest frequencies of the epistemic use of the conditional form of *moći* were recorded in the Introduction (n/1000 = 0, 82) and Discussion sections (n/1000 = 0, 64), while in the remaining sections its use was rather low, with Results showing 0, 13 and Method only 0, 08 occurrences of conditional *moći* per 1000 words (CF. Table B1, Appendix 12).

The use of the conditional *moći* generally marks a weak force of the epistemic judgment. In the present corpus, the conditional form of *moći* is associated with cautious, tentative claims which are generally concerned with the writer's subjective epistemic judgments though intersubjective uses of the conditional can also be found. In the Introduction section, the subjective epistemic evaluations may be, among others, associated with the moves in which writers present their research, in particular the assumptions driving it. The examples below illustrate this usage:

113. *Osim toga, kako je perfekcionizam poznat kao čimbenik ranjivosti za razvoj velikog broja psihičkih problema i neefikasnost, smatrali smo da bi mogao biti u podlozi akademskog neuspjeha.* (PT3)

114. *Jedna od glavnih pretpostavki ovog istraživanja jest da bi obje strategije kod muškaraca i žena mogle imati prednosti i nedostatke kada je riječ o uspješnoj reprodukciji.* (DI6)

As is the case with the use of other modals, intersubjective uses of the conditional form of *moći* point to the shared disciplinary assumptions, accessible to anyone, which in some cases do not even require the explicit mentioning of their source, as in:

> 115. *Istraživanja pokazuju da bi Stroop efekt mogao biti različit kod dviju hemisfera, odnosno da postoje razlike izmedu dviju hemisfera u učinkovitosti rješavanja zadataka sa Stroop paradigmom.* (SP1)

In the Results and Discussion sections, subjective epistemic evaluations signaled by the conditional *moći* are prevalently concerned with the writers' assuming a hedged stance with respect to the interpretations of their research findings, as in:

> 116. *Utvrđeno je da stariji učenici imaju jače izražene sve tipove negativnih automatskih misli, dok nema razlike u učestalosti pozitivnih misli. Ovakav nalaz mogao bi se djelomično pripisati i kognitivnom razvoju, jer u starijoj dobi djeca se više koriste unutrašnjim govorom u regulaciji svojega ponašanja i emocionalnoga doživljavanja.* (DI10)

Overall, the use of the conditional *moći* is associated with the indications of a writer's greater distance from the propositional content of the claims as compared to its indicative form. This distinction can be illustrated in the following example:

> 117. *Taj rezultat može biti interesantan sa stajališta interpretacije značajnog učinka pasivnog promatrača. Na bihevioralnim mjerama učinak postoji, dok kod subjektivne procjene ne. To bi moglo značiti da je intenzitet doživljaja zbog podraživanja kod 1. i 2. mjerenja bio isti, jedino je za njega trebalo više podraživanja – i to samo u E skupini.* (SP5)

While the epistemic use of the indicative *moći* signals a writer's rather neutral stance, his or her cautious stance is made more explicit by the use of its conditional form in the next sentence. The choice of the conditional is presumably motivated by the nature of the claim which carries more risk for the writer as compared to the former. In other words, by

suggesting a possible explanation for the specific research result, the writer obviously feels the need to convey a personal opinion with a greater degree of caution. Indeed, the Crocor data show that in interpretative commentaries writers favour the use of the conditional *moći* with the verbs, such as *značiti, upućivati*, etc. In such occurrences, the use of the conditional *moći* heightens a reserved stance writers adopt to their claims. Thus, in example (117), the writer could have used the conditional form of the lexical verb, which would also signal a lack of full commitment to the content, as shown in: '*To bi značilo da je intenzitet doživljaja…'* It is reasonable to assume that the presence of the conditional form of *moći* signals the writer's lower degree of certainty and marks the writer's stance even more tentatively. This supports Barić et al.'s (2005) observation on the function of the conditional forms of the Croatian modals, such as *moći, morati, trebati,* etc. in heightening a speaker's tentative stance towards the statements.

4.3 Comparison of the Engcor and Crocor findings

The focus of the preceding section was to outline how writers of psychology research articles in English and Croatian use the epistemic modal verbs to convey hedged stance towards their claims or report on the generally held disciplinary assumptions. As can be seen in Figure 5, the most obvious similarity in the use of the modals across the two corpora concerns their clustering in the most argumentative RA sections, in particular the Discussion and Introduction sections. By contrast, their use was considerably less salient in the middle sections, which is generally in line with the overall rhetorical functions of the respective RA sections.

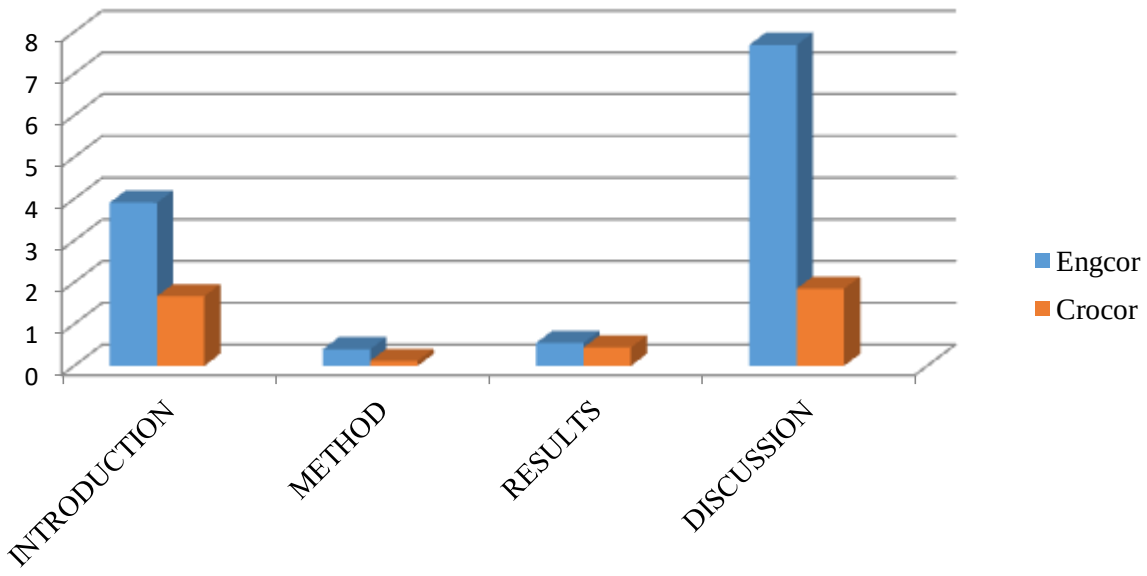

Figure 5. Distribution of the modal verbs across IMRAD in Engcor and Crocor

However, the overall findings presented in Figure 5 show that English writers expressed epistemic evaluations by means of the modal verbs generally much more frequently than Croatian writers, and they did so consistently across the whole IMRAD structure. While the overall frequencies of the modals were relatively similar in the two middle RA sections, a higher discrepancy in their use was recorded in the Introduction section, and especially in the Discussion section, where a discrepancy in the frequencies between the two sub-corpora was rather striking. The use of the epistemic modals was considerably more salient in the Discussion sections (n/1000 = 7, 69) of the English articles as compared to their use in the Croatian articles (n/1000 = 1, 85). At this point, it should be noted that the account of the cross-cultural similarities and differences in the use of all epistemic devices in the two corpora, including the modal verbs, is provided cumulatively in the General discussion (Chapter 10) and is not initiated here.

However, with respect to the use of the modal verbs under study, there are certain issues that merit attention. The first relates to the differences in the semantic scope of the

Croatian *moći* as compared to the English *may*. Though both verbs allow for the same distinctive modal meanings, which in the present study were explored against the epistemic, dynamic and merger category, the ratio of the distinctive modal meanings conveyed by the respective modals is strikingly different. According to the present findings, Croatian *moći* was prevalently used in its dynamic sense, accounting for 82% of all occurrences, while 18 % (pure epistemic readings plus mergers) may be assigned the epistemic readings.

By contrast, the epistemic uses of English *may* accounted for 88 %, while 12% of *may* occurrences were used in the dynamic sense, which generally supports its well established status as the core epistemic modal in English. A lack of the theoretical accounts on the semantics of the Croatian modals as well as the empirical studies on their use in academic writing prevent making any claims on whether the present results confirm the prototypical semantics of Croatian *moći*. It should be admitted, however, that in the contrastive survey on English modals and their equivalents in Croatian, Kalogjera (1982) points out that theoretical possibility, commonly associated with the use of the English *can*, is better captured by the Croatian modal *moći*, while the factual possibility, commonly rendered by the English *may*, is more successfully conveyed by the modal adverb *možda*, rather than *moći*. The use of the modal adverb, according to Kalogjera, reduces the possibly ambiguous meanings of *moći*, rendered by the overlaps between the epistemic and dynamic sense of the modal. However, more comprehensive corpus-based studies on the contemporary Croatian language are needed in order to make more conclusive statements on the semantic features of the modal verbs, including the modal *moći*.

With respect to the present results, it can only be inferred that compared to the use of *may* in Engcor (n/1000 = 2, 28), the use of *moći* (n/1000 = 0, 72) is a less salient way of expressing epistemic evaluations in the corpus of the Croatian research articles explored here. As for the use of the conditional forms, presuming that *might* and *could* can be

regarded as cognates of the conditional form of *moći*, the overall findings point to the higher frequency of English modals (n/1000 = 0, 93) as compared to the Croatian conditional (n/1000 = 0, 51). However, at the level of the individual modals, the overall frequencies of the conditional forms were very similar, cf. *might* (n/1000 = 0, 466) and *could* (n/1000 = 0, 462).

The second issue that should be considered here relates the methodological procedure adopted in the present study, which is particularly related to the indicated polysemy of the two modals. As previously noted, in order to increase the validity of the findings, a coding of the distinctive meanings of both *may* and *moći* was done by two raters. Despite a high agreement rate (ca. 90%), it is possible that some instances could have been categorized differently in both corpora. Admittedly, in some cases it was hard to safely decide for one rather than the other meaning. It should be noted, however, that in ambiguous cases, whenever the use of a modal raised a possibility of an epistemic reading, it was classified as a merger. To conclude, even if in some cases the reading of the modal was assigned the epistemic rather than dynamic reading or vice versa, given the fact that a detailed analysis of the semantics of the two modals was conducted by two independent raters, it is believed that even if there were such cases, they would be presumably limited in number and would not significantly alter the obtained results.

5. Epistemic adverbs and adjectives

5.1 Epistemic adverbs and adjectives in Engcor

In addition to the epistemic modal verbs, writers may convey a reduced degree of commitment to the propositional content by means of other lexical means, in particular epistemic adverbs (e.g. *possibly, probably*) and epistemic adjectives (e.g. *possible, likely*). As example (118) shows, in an attempt to account for the obtained results, the writer takes a rather cautious stance, signalling that a sample size may but does not necessarily have to be their cause.

> 118. *Gender reported a statistically significant effect on positive affect in the final model indicating a suppression effect with the inclusion of the PWB variables. These suppression effects are small in effect size and possibly a consequence of sample size.* (PID1)

According to Nuyts (2001), epistemic modal adverbs of the type *Probably they have run out of fuel* and predicative epistemic modal *adjectives It is probable that they have run out of fuel*[89] may be viewed as "the 'purest' expressions for epistemic modality,"… as "they are the most precise and specific means available for marking the degree of likelihood of a state of affairs…" (p. 55). In other words, the central exponents occupy a fairly straightforward position on the epistemic scale, whose ordering has been widely agreed upon in literature on modality (Hoye, 1999; Halliday & Matthiessen, 2004; Carretero & Zamorano-Mansilla, 2013). Thus, *certain/certainly* occupies the most positive end of continuum, *probable/probably* takes the middle position, while the position of *possible/possibly* is rather neutral, yet the lowest in comparison to the preceding two (Nuyts, 2001).

[89] The examples were taken from Nuyts (2001, p. 55).

Epistemic adverbs have been quite extensively explored in English, resulting in a range of different taxonomies which are given some attention here (Hoye, 1999; Biber et al., 1999; Conrad & Biber, 2000; Nuyts, 2001). Thus, within the semantic classification of English adverbials, Biber et al. (1999) discuss **stance adverbials**, which generally express a speaker's comment or attitude towards the propositional content. Stance adverbials are further subdivided into three major semantic categories: **epistemic,** attitude and style stance adverbials, the former being the sole focus of the present study.

Epistemic stance adverbials represent a heterogenous group of distinct meanings which indicate a speaker's commentary on the information given in the main clause (Conrad & Biber, 2000). Thus, their use may be associated with expressing doubt, certainty (e.g. *probably, definitely*); indicating limitations on a proposition (e.g. *generally, largely*), commenting on the reality or actuality of the proposition (e.g. *actually, really*), or sources of information (e.g. *according to*), to name just a few. A wide range of diverse meanings may account for the highest frequency of the epistemic adverbials as compared to other two types of stance adverbials in LGSWE (Biber et al., 1999). When it comes to academic prose, the authors note that a relatively high frequency of epistemic adverbials may reflect a considerable concern of this register with marking varying degrees of certainty towards the propositional content (Conrad & Biber, 2000).

In Hoye's (1990) adverbial typology, epistemic adverbs included in the present study are categorized **as disjuncts**, in particular content or attitudinal disjuncts which can either express degrees of (un)certainty (e.g. *definitely*, *certainly*, *likely*, *presumably*) or value judgments towards the propositional content (e.g. *fortunately*, *funnily*, *wisely*). They may allow for different correspondences, such as extraposition and anticipatory *it* (Quirk et al., 1985), as in:

a) *Certainly, she consults her lawyer regularly.*

= It is certain that she consults her lawyer regularly.[90]

The author argues that due to their relatively peripheral status to the sentence structure, disjuntcs are ideal for revealing a speaker's voice in the sentence, emphasizing thus "the subjective quality of the sentences in which they occur" (p. 179).

Similarly, Quirk and Grenbaum (1993) distinguish between style and attitudinal disjuncts, whereby the latter express the speaker's comments on the propositional content. Among distinct semantic groups of attitudinal disjuncts, the epistemic adverbs covered in the present analysis fall into the category of disjuncts concerned with degrees of doubt (e.g. *perhaps, maybe, likely, possibly, presumably*). This type of disjuncts expresses a subjective perspective on the truth of what was said, which is usually a speaker's perspective.

However, the immanent subjectivity of epistemic qualifications conveyed by epistemic adverbs has been contested by Nuyts (2001), in particular with respect to their use in scientific texts. For instance, in the following example:

> 119. *According to the allostatic load model of stress (McEwen, 2000), when autonomic andneuroendocrine responses are elevated during periods of preparation or anticipation, when the individual is not actively engaged in the stressor, cumulative wear and tear on the body may be exacerbated, and the potential for physical damage caused by stress possibly increases.* (JPSP10)

it is highly likely that the epistemic evaluation indicated by the adverb *possibly* is not attributable only to the authors of the given RA but rather to other disciplinary members as well (Nuyts, 2001). In other words, the writer is arguably reporting a shared disciplinary assumption. Therefore, the given epistemic evaluation may be qualified as intersubjective rather than subjective only. Nuyts goes on to suggest that, congruent to the use of modal

[90] The examples were taken from Quirk et al. (1985, p. 624).

verbs, the notion of (inter)subjectivity of the epistemic qualifications signaled by the adverbs has nothing to do with their inherent semantic charteristics but is rather a matter of contextual clues. With respect the use of the predicative epistemic adjectives, the author argues that they are commonly associated with the intersubjective readings, which is reinforced by the impersonal syntactic form in which they occur, as in:

> 120. *By extension, it is possible that low social self-efficacy may underlie anxious solitary children's pattern of helpless responding to social challenge.* (DP3)

Nuyts follows some earlier accounts on modality, such as Perkins' (1983), who claims that the impersonal constructions of the type 'it is possible to/that…' convey more objectivity than the corresponding modal auxiliaries *can* or *may*, primarily due the presence of the verb *be* which categorically asserts the modal evaluation. According to the Nuyts' corpus data, this type of constructions is particularly frequent in scientific texts, most notably in research reports which imply a high degree of (inter)subjectivity. The author claims that the contexts in which such constructions occur often signal that the assumptions or tentative conclusions are the result of logical reasoning shared by a writer but possibly also by other scholars, which consequently qualifies such evaluations as (inter)subjective.

The present analysis is based on the assumption that the use of both epistemic adverbs and adjectives cannot be easily delineated with respect to either subjectivity or intersubjectivity, as these notions are contingent on the contextual clues but even in the presence of these it seems hard for an analyst to unequivocally assert that the epistemic qualification is, for instance, attributable to the writer only and not to other scholars as well. For example, in sentence (121), it is likely that the impersonal construction 'it is possible that' signals a personal evaluation, in that a writer is referring to the findings of his or her research.

121. *In our first study, we demonstrated that liberals and conservatives do indeed differ in the use of gender inversion cues in making judgments about sexual orientation. However, it is possible that liberals simply do not detect the same gendered facial cues as conservatives or that liberals do not associate these gendered facial cues with sexual orientation.* (JPSP9)

The impersonal construction of this type might be regarded as a formal disguise of a writer's presence as the source of the judgment, which complies with the conventionalized requirement of objective and impersonal scientific rhetoric (Yang et al., 2015). This is especially salient in the Discussion section, where writers interpret the obtained research findings and where an agentless construction of this type might be primarily regarded as an instance of a cautious personal interpretation which may or may not be shared with other scholars. As with the analysis of the modal verbs, the present account of the epistemic adverbs and adjectives does not follow the subjective and intersubjective distinction of the epistemic evaluations in any strict sense of the word, though in discussing the corpus findings, reference to these dimensions is made where relevant.

Against the outlined background, the attention now turns to the analysis of the epistemic adverbs and adjectives encomapssed by the present study. However, prior to the outline and discussion of the corpus findings, it is necessary to outline some methodological considerations with respect to the selection and classification of the epistemic devices examined.

5.1.1 Selection and classification of the epistemic adverbs and adjectives. The selection of the epistemic adverbs and adjectives used in the present study was based on two major strands of sources, the first referring to the general grammatical accounts of the English language (Biber et al., 1999), in particular those focusing on the academic register

(Biber, 2006a) and more specific accounts dealing with the modal devices (Perkins, 1983; Hoye, 1999; Nuyts, 2001; Carretero & Zamorano-Mansilla, 2013). The other strand of sources encompassed the selected theoretical and empirical accounts of interactive features in academic writing, in particular Hyand's (1998) polypragmatic model of scientific hedges and the interactive dimension of metadiscourse (Hyland, 2005a). In addition to these accounts, several taxonomies on scientific hedges resulting from the corpus-based studies on research article writing (e.g. Salager-Meyer, 1994; Vihla, 1999; Vartalla, 2001; Hyland, 2004; Šinkūnienė, 2011) were consulted before the final list of epistemic adverbs and adjectives was compiled.

It should be noted that none of the consulted taxonomies was followed in their entirety, as they are generally more inclusive, emerging from the underlying broader theoretical backgrounds than the one adopted in this study. As a way of illustration, Vartalla's list of the adjectives performing hedging functions in research articles includes 57 different adjectives, 19 of which are classified into the category of probability adjectives. A common feature shared by the adjectives included in this category is the indication of different degrees of probability with respect to the certainty or accuracy of the propositional content. In addition to the core epistemic adjectives which show the highest frequency in Vartalla's corpus of research articles, the given category includes the adjectives such as *theoretical, prone to, apt to,* etc. which clearly do not match the scope of the present study. Along similar lines, Biber's (2006) account on epistemic stance adverbs expressing likelihood encompasses the devices which are in the present study considered to be primarily evidential markers[91] (e.g. *apparently*), and were accordingly excluded from the analysis.

[91] The function of these devices is to indicate the evidence which the proposition is based on (Biber et al., 1999).

In sum, in line with the approach to epistemic modality adopted in this study as well as the above-cited literature, the list of epistemic adverbs and adjectives included here is based on the selection of the devices with the epistemic semantic component at its core (Carretero & Zamorano-Mansilla, 2013). In addition, the list encompasses only the single-word adjectives and adverbs, as this has been shown to be the most frequent syntactic form of stance adverbials in the academic register (Biber et al., 1999; Conrad & Biber, 2000). The final list of the epistemic adverbs and adjectives included the following: PERHAPS; POSSIBLY; PROBABLY; PRESUMABLY; (UN)LIKELY; CONCEIVABLY; POSSIBLE, PROBABLE, PLAUSIBLE. As can be seen in Table A2 (Appendix 12), the initial list included two additional adverbs *plausibly*[92] and *maybe*,[93] however the frequency analysis showed no occurrences of these adverbs in Engcor.

Another methodological consideration in the selection of the epistemic devices deals with the treatment of the polysemous nature of some epistemic adverbs and adjectives, as discussed in previous accounts on epistemic modality and hedging (Hyland, 1998; Vihla, 1999). One of the most obvious distinctions concerns the syntactic environments in which the adjective *possible* can occur. More specifically, the predicative adjective *possible* can control both to- and *that*- complement clauses (Biber et al., 1999), entailing dynamic and epistemic modal readings, as shown in the following examples, respectively:

> 122. *As argued by Jarrold et al. (2000), it is possible for two measures to share variance but also predict separate variance in a third measure (see also Cowan et al., 1998).* (DP2)

[92] The adverb *plausibly* was found only in conveying a non-epistemic meaning, which is synonymous to the meanings of *convincingly* or *credibly* (Carretero & Zamorano-Mansilla, 2013), as in: *In the study, the experimenter singled out and congratulated the confederate for getting a perfect score on an unusually difficult task. Such "overpraise" can plausibly elicit either embarrassment or pride displays ...* (JPSP3).

[93] A non-salient status of *maybe* in academic writing has been reported by Biber et al. (1999). Thus, LSWE Corpus findings point to less than 50 occurrences of *maybe* as opposed to e.g. *perhaps*, which shows more than 300 occurrences per million words in academic prose.

123. *By extension, it is possible that low social self-efficacy may underlie anxious solitary children's pattern of helpless responding to social challenge.* (DP3)

While in the example (122) the dynamic reading of *possible* is congruent to the dynamic reading of the modal verb *can* (i.e. two measures can share variance...), signaling the inherent characteristic of the inanimate subject, the epistemic reading of *possible* in (123) indicates the writer's evaluation of a possibility that the given state of affairs is true.

An additional distinction concerns the attributive uses of *possible*, again allowing for both a dynamic (i.e. theoretically possible) and epistemic reading (i.e. conceivably possible), as illustrated in examples (124) and (125), respectively:

124. *Possible scores thus ranged from 0 to 4.* (DP4)

125. *One possible reason for the significant associations between behavioral engagement and nonacademic outcomes is that high levels of psychological distress or frequent involvement in delinquency and substance use may make it difficult to be fully involved in academic activities.* (DP10)

With respect to the present analysis, only the epistemic uses of this adjective were included in the analysis. Whereas the examples (124) and (125) are pretty much straightforward with respect to the distinction between epistemic and dynamic readings, in some cases the intended reading of *possible* is rather ambiguous. For instance, in example (126) it is not entirely clear whether the meaning of *possible* refers to the effects that have been proven as possible or to those that a writer speculates as possible to occur:

126. *With the rising use of CMC for daily interactions, researchers have started to examine the possible negative psychological effects of CMC. For example, it has been suggested that because internet activities interfere with other social activities it can lead to addiction (Brenner, 1997).* (PID9)

As Hyland (1998) observes, resolving the polysemous nature of such occurrences primarily depends on the subject specific knowledge accessible to the subject specialists both as

writers and readers, and as such might constitute a limitation in the linguistic analysis of this type. As previously discussed with respect to merger cases of the modal *may*, when the contextual clues signaled a possibility of an epistemic reading, the potentially ambiguous instances of the given adjective, such as example (126), were included in the frequency analysis.

Further epistemic devices that merit clarification with respect to the epistemic and non-epistemic occurrences concern the epistemic adjective and adverb *likely*, both of which have been recognized as frequently employed epistemic devices used for marking epistemic likelihood in academic writing (Hyland, 1998; Vartalla, 2001). The epistemic uses of *likely* as an adverb (127) and adjective (128; 129) included in the analysis are exemplified by the following corpus data, respectively:

> 127. *This focus on appearance is likely linked to disordered eating as youth attempt to improve their perceived physical appearance by moving toward a thin ideal...* (DP7) (= probably)
>
> 128. *It is likely that emotional closeness plays a role in the social regulation of emotion, which has been receiving increasing attention ...* (PID4) (= probably)
>
> 129. *In Studies 1-3, we focused on antecedent appraisals distinguishing anger, disgust, and contempt; however, our extended social-functionalist account also makes specific predictions about the likely consequences of these emotions.* (JPSP4) (= probable consequences)

For the sake of brevity, at this point it suffices to note that in all of these occurrences the epistemic readings of *likely* can be supported by the possible paraphrases as indicated in the brackets, suggesting the writer's evaluations that the states of affairs are likely true. However, in (130) the use of the comparative form of *likely* can hardly be interpreted as epistemic, since it merely points to the writer's comparison of the subjects' inclinations

towards certain types of behavior rather than his or her epistemic evaluation of the propositional content.

> 130. *Women are three times more likely than men to report disordered eating (Kessler et al., 2004), and they have consistently higher self-surveillance scores than men do (McKinley, 1998).* (DP7)

Similarly, the use of *likely* in (131) is regarded here as an instance of a description of an individuals' tendencies with respect to particular events rather than an indication of the writer's epistemic stance.

> 131. *Victims of peer sexual harassment are also likely to report depression (Nadeem & Graham, 2005), anxiety (Nishina & Juvonen, 2005), low body esteem (Lindberg, Grabe, & Hyde, 2007), and reduced academic performance...* (DP7)

The uses of *likely* such as (130) and (131) were quite frequently employed in Engcor, however given their non-epistemic readings, and in line with previous research (Vihla, 1999), they were excluded from the analysis. The aim of the preceding section was to illuminate the methodological considerations with respect to the criteria used to distinguish between epistemic and non-epistemic occurrences of the adverbs and adjectives under study. The remainder of this chapter deals with the outline and discussion of the Engcor findings, starting with the outline of the overall findings with respect to the two categories of epistemic devices.

5.1.2 Overall findings of the epistemic adverbs and adjectives in Engcor. As can be seen in Figure 6, the Engcor findings show the overall higher frequency of epistemic adjectives (n/1000 = 0, 55) as compared to epistemic adverbs (n/1000 = 0, 34).

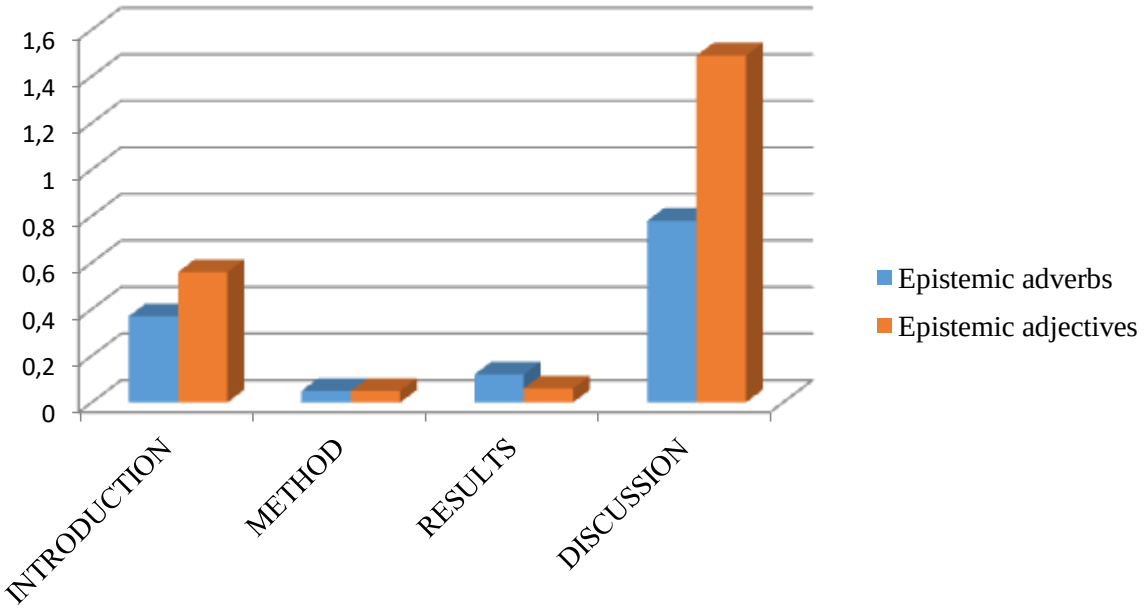

Figure 6. Distribution of the epistemic adjectives and adverbs across IMRAD in Engcor

The present results are in line with the LSWE findings (Biber et al., 1999), which point to the prevalent use of adjectives rather than adverbs in academic prose. As can be seen in Figure 6, the distribution of epistemic adverbs and adjectives reflects the overall rhetorical functions of the RA sections, with the highest frequency of the occurrences recorded in the Discussion and Introduction section, as the two rhetorically most evaluative sections of RAs. By contrast, the overall frequency of the given devices in the remaining two RA sections was relatively negligible, which is in accordance with their prevalently descriptive character.

In addition, Figure 6 shows that the overall distribution of the epistemic adverbs and adjectives across the RA sections was relatively similar, with the highest discrepancy in the frequencies recorded in the Discussion section, where epistemic adjectives (n/1000 = 1,49) were considerably more frequently used as compared to the epistemic adverbs (n/1000 = 0,78). In the Introduction section, this difference was lower, with the adjectives showing 0, 56 and the adverbs 0, 37 occurrences per 1000 words. The section that follows deals with a

more detailed account of each respective category, starting with the account of the epistemic adverbs.

5.1.3 Discussion of the corpus findings for the epistemic adverbs. As can be seen in Table A2 (Appendix 12), the most frequent epistemic adverbs used in Engcor include the following adverbs in a descending order of frequency: *likely* (n/1000 = 0, 14); *perhaps* (n/1000 = 0, 08); *possibly* (n/1000 = 0, 05); *presumably* (n/1000 = 0, 3); *probably* (n/1000 = 0, 02), and *conceivably* (n/1000 = 0, 004).

Generally, the present results seem to be in line with previous research on academic discourse, in particular with respect to the saliency of *likely*, *perhaps*, and *possibly*, as the three most frequent epistemic devices used in Engcor. As a way of illustration, according to LSWE findings (Biber et al., 1999), *perhaps* is the most frequent stance adverb in academic prose, followed by *probably*, and the use of both adverbs is associated with the contexts in which writers (or speakers) hypothesize, presume, account for, or interpret data for which they lack solid evidence. The centrality of the most frequent adverbs used in Engcor was also recorded in a number of corpus-based studies on hedging in research article writing (cf. Vihla, 1999; Vartalla, 2001; Šinkūnienė, 2011).

At the level of the individual items, the current analysis shows that *likely* is strikingly the most commonly employed adverb in Engcor (n/1000 = 0, 14), with almost double the frequency of the second most frequent adverb *perhaps* (n/1000 = 0,08). It is hard to precisely account for the Engcor writers' preference for the use of *likely*, especially when combined with the high frequency of its corresponding adjective (see below). At present, it might only be speculated that the saliency of the given adverb may be connected with its

more characteristic use in American English,[94] unlike its close synonym *probably*, and the fact the most articles in the present English corpus were written by the authors affiliated with U.S. universities. In that respect, it would be interesting to investigate the use of *likely* in the parallel British English-based corpus and explore whether its frequency could be related to the variety of English or whether it is a matter of a disciplinary preference towards a particular linguistic device.

With respect to the pragmatics of the epistemic adverbs in academic writing, previous research shows that they are primarily used to indicate a degree of uncertainty with respect to the propositional content, marking the extent to which the claim may be considered reliable (Hyland, 1998). As can be seen in the examples (132-134) below, the highlighted epistemic devices indicate a varying degree of writers' commitment to the proposed claims, signaling their provisional nature.

> 132. *In the present study, there were no differences in the P3 between age groups, possibly indicating that the reduction of the ERN in younger adolescents on both tasks was likely due to immaturity of the error monitoring system.* (DP8)
>
> 133. *Furthermore, the amount of contact participants reported having with gay men was unrelated to their endorsement of the stereotypes, suggesting that ideological differences in stereotype application are probably not driven by liberals' greater exposure to gay men.* (JPSP9)
>
> 134. *Disgust sensitivity was unrelated to unprovoked aggression, presumably because an avoidant urge had not been stimulated.* (JPSP6)

Thus, the lowest probability is signaled by *possibly*, the medium by *probably* and *likely*, while the highest is probably in the case of *presumably*, yet still lower than absolute certainty. These and similar examples with the epistemic adverbs indicate that a writer is

[94] *likely, adj.* = Meaning "probable" is attested from the late 14c., now principally in American English Retrieved from http://www.etymonline.com/

providing speculative rather than conclusive claims. As previously discussed, these can also be signaled by the epistemic modal verbs, so it is not uncommon for the epistemic modal verbs and adverbs (but also other epistemic devices) to co-occur in the contexts in which writers indicate their lack of certainty with respect to the information presented, acknowledging thus a limited state of knowledge against which the claims are made. Commenting on the use of the hedges in her writing, one of my U.S. informants said the following:

> "Though in some cases I am pretty much convinced that some issues concerning my research could be addressed more confidently, I do not want to go beyond my data. As a matter of fact, I am comfortable acknowledging the uncertainties and ambiguities in my research. I am only trying to be honest with my findings." (Interviewee 4)

Example (135) may serve to illustrate the point:

> 135. *Thus, higher C may alter the focus of neurotic tendencies toward more functional outcomes. This may be because of underlying effortful control effects of C, or perhaps because achievement striving and goal-focused behavior is characteristic of high-C individuals.* (PID10)

The foregoing examples were extracted from the Discussion sections and given the broader context it may be assumed that the use of the epistemic adverbs indicate subjective epistemic evaluations, in which writers express caution in interpreting the results of their own research. This may account for the highest frequency of the epistemic adverbs particularly in the Discussion section (n/1000 = 0, 78). However, as indicated at the outset of this section, epistemic adverbs may also indicate intersubjective epistemic qualifications. Their use is particularly but not exclusively characteristic for the Introduction section, which is characterized by a high density of references to the theoreical accounts as well as previous

research against which the existing research is contextualized. For instance, in example (136) below, based on the contextual clues but also our knowledge of the world, it is likely that a writer is not solely responsible for the epistemic evaluation signaled by the epistemic adverb but is rather referring to the one that is potentially shared by other scholars as well (Nuyts, 2001).

> 136. *According to the allostatic load model of stress (McEwen, 2000), when autonomic and neuroendocrine responses are elevated during periods of preparation or anticipation, when the individual is not actively engaged in the stressor, cumulative wear and tear on the body may be exacerbated, and the potential for physical damage caused by stress possibly increases.* (JPSP10)

In addition to signaling the speculative nature of the claims, the devices under study may be used for reasons other than purely epistemic, as suggested by previous research (Šinkūnienė, 2011; Carretero & Zamorano-Mansilla, 2013; Mauranen, 1997; Holmes, 1984). For instance, while in example (137) the epistemic adverb *perhaps* signals an assessment of epistemic possibility, in (138) its use might be motivated by the writer's desire not to state the claim too assertively, as a reader could perceive it as too intrusive.

> 137. *The repeated experience of a particular type of traumatic event (e.g., childhood sexual abuse) may have different long-term implications than repeated exposure to illness or loss, perhaps because of the larger questions of unfairness and injustice such events may trigger or the increased amount of self-blame they may engender (Silver & Wortman, 1980).* (JPSP8)

> 138. *Prior to there being a concern over copyrighting of item content, it appears to us to be intelligent to use those markers of traits that, on objective and subjective criteria, might be relatively good. Better that, perhaps, than a constant reinventing of the marker items each time a trait had to be studied. This may be an interesting and fruitful field for others to explore.* (PID3)

As suggested by the contextual clues, writers in example (138) are proposing a particular course of action, and in addition to the expression *it appears to us* in the previous sentence, *perhaps* seems to further mitigate potential assertiveness of this suggestion, serving thus interpersonal rather than prototypically epistemic purposes (Šinkūnienė, 2011; Carretero & Zamorano-Mansilla, 2013). In other words, it might be argued that the adverb functions as a comment, the status of which is further supported by its parenthetical position in the sentence (Hoye, 1999). As Carretero and Zamorano-Mansilla (2013) observe, this does not suggest that the meaning of probability is completely absent, which justifies the decision to treat the adverb *perhaps* as one semantic unit in the frequency analysis. With respect to example (138), this may be attested by the following paraphrase: 'it is possible that X is better than...', which indicates its epistemic status.In sum, the examples such as (137) and (138) indicate that the motivation for the use of epistemic adverbs, at least the adverb *perhaps* as one if its central candidates, may extend prototypically epistemic reasons and concern those related to politeness, underpinning pragmatic polyfunctionality of epistemic devices in actual languge use (Hyland, 1998; Šinkūnienė, 2011; Carretero & Zamorano-Mansilla, 2013).

Finally, concerning the placement of epistemic adverbs in the sentence, the Engcor findings support the well-established positions of adverbs in English, with the medial position being the most prevalent (Hoye, 1999; Conrad & Biber, 2000). In other words, in a vast majority of cases the epistemic adverb is interpolated in the clause structure (as can be seen in all of the examples outlined so far in this section). This is in line with Hoye's (1999) observations on the tendency of "modal environments…to favour the interpolation of adverbs which express dubitative meanings, conveying the speaker's relative degree of uncertainty" (p. 197). However, few corpus findings show that the epistemic adverbs may

take the initial position, in which, admittedly, only *perhaps* and *presumably* occurred, as shown in the examples below:

> 139. *Perhaps father increases his monitoring in families where the adolescent resists the monitoring efforts of the mother. Further work is needed on both affect-based and management-based parenting behaviors to discern whether...* (DP9)

> 140. *In our analysis, the difference between good and bad habits lies in the relation between habits and currently pursued goals. Good habits promote current goals, and bad habits impede them. Presumably, most habits were formed initially because they promoted goals-people are likely to repeat behaviors in stable contexts when the behavior generates desired outcomes.* (JPSP5)

The initial position of the adverb focalizes the modal values and indicates that a writer evaluates the propositional content as the source of the authority, emphasizing his or her position towards it (Hoye, 1999). With respect to the final position of the epistemic adverbs, no occurrences were recorded in Engcor, which is again in line with some previous accounts suggesting the infrequency of this adverbial position in academic discourse (Conrad & Biber, 2000).

5.1.4 Discussion of the corpus findings for the epistemic adjectives. Epistemic adjectives constitute yet another group of the lexical devices writers have at their disposal to convey an epistemic judgment towards the propositional content. The role of epistemic adjectives in academic writing has been mainly explored within more extensive studies on epistemic stance markers controlling extraposed *that*–clauses (Hewings & Hewings, 2002; Hyland & Tse, 2005) or corpus-based research on academic formulaic language, in particular lexical bundles (Cortes, 2004; Hyland, 2008). Lexical bundles may be defined as "extended collocations, sequences of three or more words that statistically co-occur in a register" (Cortes, 2004, p. 400). Thus, a typical lexical bundle concerning the use of the

epistemic adjectives involves the adjective *possible* in the anticipatory *it*- pattern followed by a *that*-clause (Cortes, 2004),[95] as in:

> 141. *It is possible that the discrepant results between the current study and previous work were due to modeling artifacts, though this was investigated as thoroughly as possible.* (DP1)

As is the case with the epistemic adverbs, the Engcor findings indicate that psychology writers have their preferred choices with respect to the use of the epistemic adjectives, too. As can be seen in Table A3 (Appendix 12), the two most frequent adjectives were *possible* (n/1000 = 0, 26) and *likely* (n/1000 = 0, 21), which more or less matches the use of the congruent epistemic adverbs. *Unlikely* showed a low frequency of use (n/1000 = 0, 05), while *plausible* (n/1000 = 0, 02) and especially *probable* (n/1000 = 0, 008) were used quite rarely.

The present results are relatively consistent with the findings of previous studies on hedges in research articles, pointing to the centrality of the two epistemic adjectives, viz. *possible* (Hyland, 1998; Vartalla, 2001; Vold, 2006a) and *(un)likely* (Hyland, 1998; Vartalla, 2001). As the Engcor findings show, both *possible* and *likely* show similar patterns of distribution across the RA rhetorical sections. As expected, the highest density of the occurrences was recorded in the Discussion (n/1000 = 1, 3) and Introduction (n/1000 = 0, 43) sections, while in the Results (n/1000 = 0, 04) and Method (n/1000 = 0, 04) sections the use of the given adjectives is quite negligible.

A further similarity in the epistemic uses of *possible* and *likely* concerns the syntactic patterns in which they occur. As can be seen in the examples below, both adjectives can be

[95] In her account on the lexical bundles in academic writing, Cortes (2004), among others, reports on *stance bundles* (e.g. *may be due to, it is possible that, it is likely that,*) which are used to signal a degree of tentativeness concerning the propositional content, functioning thus as the typical hedges.

used predicatively, in controlling extraposed *that*-clauses (142,143), and attributively (144, 145). In both uses, adjectives retain their epistemic meaning (Perkins, 1983), as attested by the paraphrases below (144-145):

142. *However, it is possible that liberals simply do not detect the same gendered facial cues as conservatives or that liberals do not associate these gendered facial cues with sexual orientation.* (JPSP9)

143. *It is likely that emotional closeness plays a role in the social regulation of emotion, which has been receiving increasing attention (e.g., Coan, Schaefer, & Davidson, 2006; Rimé, 2007; Shaver & Mikulincer, 2007).* (PID4)

144. *Although contempt and moral disgust have often proven difficult to separate, our extended social-functionalist perspective suggests a possible distinction between them.* (JPSP4) (= it is possible that theere is a distinction between them)

145. *One likely reason for the near absence of such work in the literature is that the question spans research areas (e.g., persuasion, decision making, trust formation, marketing, learning, memory, gossip).* (JPSP1) (= it is likely that one reason for the near absence of such work...)

Regarding the syntactic form, the corpus findings also point out that epistemic *likely*, but not *possible*[96] can control *to*-clauses in post-predicate position (Biber et al., 1999), as in:[97]

146. *Given the complexity of context and the diversity among individual characteristics, heterogeneity in the nature and trajectories of behavioral and emotional school engagement are likely to exist.* (DP10)

According to Biber et al. (1999), the function of an epistemic adjective in this pattern is to evaluate the likelihood and thereby stance towards the content embedded in the *to*-clause.

[96] The use of the adjective *possible* controlling *to*-infinitive clause is linked with dynamic modal meanings.

[97] According to Biber et al. (1999), *likely* is a single adjective whose use is notably common in this syntactic pattern, occurring 50 times per mil. words in the LSWE Corpus.

With respect to the use of *likely* in example (146), its epistemic reading may be illustrated by the following paraphrase: 'it is likely that heterogeneity and trajectories ... exist.'

The overall frequency of the predicative and attributive uses of *possible* and *likely* is presented in Table A4 (Appendix 12). As can be seen, the predicative use of the adjectives (n/1000 = 0, 33) showed a significantly higher frequency than the attributive use (n/1000 = 0, 13). More specifically, the overall frequency of the given adjectives controlling extraposed *that*- clauses was significantly higher (n/1000 = 0, 22), as compared to *to*-clauses in the post-predicate position (n/1000 = 0, 10). In that sense, the present findings support the overall tendency of certainty adjectives, in particular the adjectives *(un)likely* and (*im)possible* to control extraposed *that*-clauses, as attested by the LSWE Corpus findings (Biber et al., 1999). As the authors note, the adjectives controlling extraposed *that*-clauses typically mark epistemic stance towards the proposition, which, though not overtly expressed, essentially represents a writer's stance.[98]

As previously noted, at the level of the individual epistemic adjectives, *possible* is generally used more frequently than *likely*. When it comes to the use of the two in *that*-extraposition, a discrepancy in the overall results is even greater, pointing to 0, 15 occurrences of 'it is possible that' as compared to 0, 07 occurrences of 'it is likely that' per 1000 words. The saliency of the adjective *possible* in this particular pattern has been attested by previous research, in particular large-scale corpus-based studies on the formulaic language use in academic writing (Biber et al., 1999; Cortes, 2004; Hyland, 2008). As a way

[98] This observation runs contrary to the previously discussed suggestions regarding the inherent objectity (Perkins, 1983) or intersubjectivity (Nuyts, 2001) of the epistemic evaluations expressed by the impersonal syntactic pattern, such as 'it is possible that...'

of illustration, Hyland's (2008) findings show that 'it is possible that' is among 50 most frequent lexical bundles in a 3.5 million corpus of academic texts.[99]

Overall, the use of the epistemic adjectives controlling extraposed *that*-clauses is particularly salient in the Discussion and Introduction sections. The Engcor findings show that their use is mostly connected with writers' evaluations of research findings. Subjective readings of the given epistemic evaluations indicated are often further supported by the presence of other overt indicators of a writer's presence in the text, as is the case with the personal and possessive pronouns in the following example:

> 147. *In our first study, we demonstrated that liberals and conservatives do indeed differ in the use of gender inversion cues in making judgments about sexual orientation. However, it is possible that liberals simply do not detect the same gendered facial cues as conservatives or that liberals do not associate these gendered facial cues with sexual orientation.* (JPSP9)

The use of the epistemic adjectives marking a writer's subjective evaluation seems to be prevalent in both rhetorical sections, which is perhaps slightly unexpected for the Introduction section in which writers are expected to position their research against the relevant theoretical and empirical background and not to evaluate it. It should be noted that some articles in Engcor do not follow the conventional IMRAD structural pattern in a sense of having a single Introduction, Method, etc. (cf. Methodological framework). Rather, some articles report on three or even more studies and each consists of an IMRAD structure on its own, in addition to the general Introduction and Discussion sections in the article as a whole. In that sense, a short Introduction section may contain an account of the results obtained in the previous study, which provides the basis for the next step undertaken in the subsequent study and so on. This may account for the prevalence of the epistemic adjectives occurring

[99] The given corpus consists of the articles, PhD dissertations, and Master's theses.

in extraposed *that*- clauses, signaling a writer's stance towards his or her research. However, more general evaluations, conveying intersubjective readings are also evident in Engcor. For example, in the next sentence, the epistemic evaluation may be attributable to the writer of the given RA but equally so to other disciplinary members:

> 148. *It is likely that emotional closeness plays a role in the social regulation of emotion, which has been receiving increasing attention (e.g., Coan, Schaefer, & Davidson, 2006; Rimé, 2007; Shaver & Mikulincer, 2007).* (PID4)

As is the case with all epistemic devices discussed so far, the Engcor findings point to the preferences of epistemic adjectives to co-occur with certain epistemic devices. Such is the case with the adjective *likely* which frequently combines with the epistemic-evidential verb *seem,* as illustrated in the following example:

> 149. *Although we found no evidence that perceivers' levels of prejudice contributed to the use of gender inversion stereotypes, it seems likely that prejudice would play a role in downstream judgmental processes that occur once a given individual has been categorized as gay.* (JPSP9)

It is likely that the presence of *seem* strengthens the writer's hedged stance which is already implied by the epistemic adjective. This can be illustrated by replacing the verb *seem* with the verb *be*: *it is likely that...,* which indicates the writer's higher degree of certainty as compared to the former. As already observed, such and similar compound or multiple hedges are particularly salient in academic writing (Salager-Meyer, 1994; Hewings & Hewings, 2002; Darian, 2003). They indicate even further distance from the definitive qualifications of the statements than implied by single hedges, allowing writers to clearly underpin the purely speculative nature of their claims (Darian, 2003). The Engcor findings show that the verb *seem* is a particularly favored component of compound hedges with the epistemic adjectives. In all of the examples below, its presence seems to suggest the writers'reluctance to assert their claims more forcefully:

150. *It seems probable that the anonymity provided by CMC reduces the anxiety that an introvert normally experiences during a FtF interaction.* (PID9)

151. *For a variety of related reasons, then, it seems plausible that political ideology would affect social categorization processes, especially under circumstances of perceptual ambiguity.* (JPSP9)

152. *It thus seems unlikely that there were major selection biases in the present study.* (DP6)

When it comes to the attributively used epistemic adjectives, they generally allow writers to hedge the content condensed in the nominal phrase (Hyland, 1998), as shown in the following example:

153. *One likely reason for the near absence of such work in the literature is that the question spans research areas (e.g., persuasion, decision making, trust formation, marketing, learning, memory, gossip).* (JPSP1)

The Engcor findings point to the pervasive attributive use of the adjective *possible*, particularly in the Discussion section. Though the scope of the present study does not include the move analysis of the rhetorical sections in a psychology RA, it may be argued that a high density of attributive *possible* in this section is particularly associated with the moves focused on the writers' interpretations and commentaries on research results (Ruiying & Allison, 2003). Example (154) may serve to illustrate the point:

154. *Possible alternative explanations for our primary findings differentiating respondents with a history of no versus low lifetime adversity are that individuals with no adversity were younger, more socially isolated, or less likely to seek out opportunities in life. None of these alternatives were supported by our supplementary analyses.* (JPSP8)

In addition, the attributive use of *possible* can be found in the segments concerned with the writers' acknowledgments of potential limitations or difficulties with respect to various aspects of their research, as in:

155. *However, one possible weakness of Study 2 is that the learning required to successfully utilize the nonsocial cues and the advice was somewhat unique to each case.* (JPSP1)

It should be noted, however, that despite rather straightforward cases in which the epistemic adjective *possible* hedges the writer's commitment to the claim (as is the case with the examples above), there were instances where the meaning of the adjective was rather ambiguous (cf. example 126). Therefore, it is possible that the high frequency of the given adjective in Engcor might be due to the potential overlaps between its epistemic and dynamic meanings, though such instances were, admittedly, few in number.

Comparing the overall findings of the predicatively and attributively used epistemic adjectives in Engcor, it can be seen that the former were used considerably more frequently (n/1000 = 0, 40) as compared to the latter (n/1000 = 0, 14) (Table A4, Appendix 12). This finding seems to be in contrast with a generally higher prevalence of attributive rather than predicative uses of adjectives in academic prose (Biber et al., 1999; Soler, 2002).[100] A more salient use of the attributive adjectives may be accounted for by the fact that they are one of the primary means of packaging additional information into a noun phrase, which the academic register relies heavily on when presenting information (Quirk et al., 1985; Biber et al., 1999).

When it comes to the present findings, one of the possible reasons for the obtained distribution of adjectives might refer to the fact that, as hinted above, attributive adjectives bring focus to an object, i.e. a noun (Soler, 2002). By contrast, predicatively used adjectives allow frames for the intellectual claims (Biber et al., 1999), which seems to be congruent with the hedging functions of epistemic adjectives in academic writing. More specifically,

[100] Moreover, attributive adjectives show predominatly highest frequency in academic prose as compared to other registers investigated in the LGSWE, which denotes their use as one of the characteristic features of the language used in academic context.

the predicative use of adjectives, particularly in *that*-extraposition, foregrounds a writer's stance towards the evaluated propositional content, which is in that way made more explicit (Soler, 2002; Hyland & Tse, 2005). Apparently, concerning the use of the epistemic adjectives this pragmatic function is more relevant to the psychology writers investigated in the present study.

5.2 Epistemic particles, adverbs and adjectives in Crocor

The modal devices which are in the focus of the present analysis may be illustrated by the following examples extracted from Crocor:

> 156. *Međutim, učinci nezaposlenosti vjerojatno nisu jednaki za sve skupine nezaposlenih, jer, osim kontekstualnih, postoje i osobni čimbenici koji mogu moderirati utjecaj nezaposlenosti na zdravstveno stanje pojedinaca.* (SP8)
>
> 157. Osim ovih metodoloških *razloga moguće je da su uzrok takvim rezultatima i neke kulturalne specifičnosti.* (PT7)
>
> 158. *Kod nekih se osoba u ispitnim situacijama i situacijama procjene može javljati ispitna anksioznost, koja može biti jedan od mogućih razloga njihova neuspjeha.* (PT3)

Though belonging to different word classes, viz. particles/adverbs (156, 157) and adjectives (158), a common thread that binds their use is an indication of writers' assessments of possibility and likelihood of the given state of affairs. In that respect, the indicated devices may be considered as the true exponents of epistemic modality in Croatian.

Congruent to their English cognates, the Croatian epistemic particles, adverbs and adjectives show a scalar ordering of epistemic meanings, with *siguran/sigurno* indicating the highest degree of epistemic certainty, followed by *vjerojatan/vjerojatno* and *moguć/moguće*

implying the lowest degree.[101] In the context of academic writing, the former of the three is associated with the rhetorical strategy of boosting. As previously indicated, the use of boosters in academic writing is concerned with conveying a writer's high degree of commitment to the propositional content, as shown in the following example:

> 159. *Način na koji su se roditelji ponašali prema djeci zasigurno se odražava na to kako se ta djeca ponašaju prema svojoj djeci (Putallaz i sur., 1998), a najviše empirijskih dokaza u prilog ovoj tvrdnji proizlazi iz istraživanja o fenomenu zlostavljanja.* (PT1)

In line with the scope of the present study, the focus of the analysis here is only on the devices occupying the middle and low positions on the epistemic scale, given their already identified role in hedging the writer's commitment to the content presented. Following the procedure adopted in the section on epistemic adverbs and adjectives in English, the section that follows sets off with the outline of the general characteristics of the modal particles, adverbs and adjectives based on the existing accounts in the Croatian grammar books. At the same time, the section accounts for the way the epistemic devices under study are treated in the present analysis.

5.2.1 General characterization of the epistemic particles, adverbs and adjectives in Crocor. Unlike English epistemic adverbs whose word class status is well-established in the English grammar, the words such as *vjerojatno (Engl. probably, likely), možda (Engl. maybe),* etc. are not treated unanimously in the contemporary Croatian grammar books.

[101] Discussing epistemic modal adverbs in Serbian, Trbojević-Milošević (2004) adds the modal *teško* as an indicator of the lowest degree of epistemic modality, which may be illustrated as follows: *Igrači koji danas imaju oko 35 godina teško da će izdržati novi olimpijski ciklus, tako da bismo mi, generacija između '70. i '72. godine, trebali iznijeti glavni teret.* Retrieved from http://riznica.ihjj.hr/philologic/Tiskovine.whizbang.form.hr.html). However, the Engcor findings showed no occurrences of this adverb.

More precisely, they can be found under the labels of both adverbs and particles.[102] Thus, Raguž (1997) classifies the given devices as sentence adverbs, while Težak and Babić (2009) group them in the adverbial class labelled as the *Other adverbs*. Judging by the mere label, it could be assumed that the status of the given words is not considered as prototypically adverbial. Indeed, the members of this adverbial class do not modify only a verb or other words, as the typical adverbs denoting time, place, manner, etc., but rather the whole sentence. Semantically, the adverbs listed in this category may express the notions such as certainty (e.g. *svakako, zaista*), likelihood (e.g. *valjda*), doubt (e.g. *navodno, naizgled*), etc.[103]

The distinctive character of the words such as *vjerojatno, sigurno, možda,* etc. is also recognized by Barić et al. (2005) who treat them as particles.[104] According to the authors, the particles share their surface features with adverbs, but are distinguished from the latter in that they do not modify the individual words or parts of the sentences, but rather relate to the meaning of the whole sentence. As such, they function as the independent elements of the sentence. The authors define the particles as the words which express a speaker's attitude towards the content of the proposition based on his or her knowledge, wishes, or feelings. In that sense, they may be used for various purposes, such as intensification, denial, evaluation of the propositional content, etc.

Silić and Pranjković (2005) provide a similar account of the particles in Croatian and define them as the words which express a speaker's attitude towards the whole or a part of the propositional content, or in any other way modify the sentence or its elements. Of

[102] On the fuzzy boundaries between particles and adverbs in Croatian see e.g. Pranjković (2004).

[103] The English equivalents of the given adverbs in the order of appearance are the following: *certainly, really, maybe, allegedly, seemingly.*

[104] Cro. *čestice, riječce, partikule* (Barić et al., 2005)

particular interest for the present study are the modal particles or modifiers, which function at the textual level and include the devices, such as *možda, vjerojatno, doista, stvarno,* etc. According to the authors, the same canonical form may function as both an adverb and a particle.[105] However, the two classes are distinguished on the grounds that the adverbs are concerned with the circumstances of an action denoted by a verb, whereas particles convey a speaker's attitude towards the content of the sentence.

Sesar (1992) provides a more detailed account of the particles in Croatian, defining them as distinctive modal devices that signal a particular kind of relationship between a speaker, content and the real world. Their function is to modalize the whole or a part of the statement. Within Sesar's taxonomy of the particles at the morphological level, the particles associated with the epistemic modal meanings are included in the group of adverb particles,[106] encompassing the manner adverbs such as *vjerojatno, možda, očito, nikako*, etc. According to the author, the given particles function mostly as the indicators of Modality of plausibility, which denotes various degrees and shades of a speaker's or other evaluator's commitment to the plausibility of the proposition, as in: "*Oni će te valjda/možda/sigurno bolje razumjeti."* (Sesar, 1992, p. 257).

Without any attempt to go into a more detailed discussion on the status of adverbs and particles in Croatian, the present study follows the accounts which treat the above-cited lexical devices as adverb particles (Sesar, 1992) or modifiers (Silić & Pranjković, 2005). This decision was led primarily by the previously discussed semantic criteria in defining

[105] For instance, *sigurno* in the sentence: *Ona je sigurno polagala vozački ispit (Engl. She was taking the driving test confidently)*, modifies the verb and functions as an adverb. By contrast, in the sentence: *Ona je, sigurno, polagala vozački ispit (Engl. It is certain that she was taking the driving test) sigurno* functions as a particle, conveying a writer's high degree of conviction in the truth value of the claim (The example sentences were taken from Silić and Pranjković, 2005, p. 258).

[106] Cro. *priložne partikule* (Sesar, 1987; 1992)

particles, i.e. their salient (modal) function in conveying speaker's attitudes towards the propositional content, which clearly encompasses the scope of epistemic modality as understood in the present study.

A further aspect concerning the status of the epistemic devices examined here concerns the use of *vjerojatno* and *moguće* in the sentences of the following type:

160. *Osim ovih metodoloških razloga moguće je da su uzrok takvim rezultatima i neke kulturalne specifičnosti.* (PT7)

161. *Vjerojatno je da se otvorenost preklapa s profesionalnim interesima zaposlenih u ugostiteljstvu, vezano uz njihovu komunikaciju s klijentima i usluživanje.* (PT5)

The status of the two has been treated differently by Croatain linguists. Pranjković (2001) treats the highlighted devices as the adverb phrases which function as the nominal predicates controlling *da*-complement clauses in Croatian. As previously noted, in addition to the verbs which denote cognition, emotions, volition, etc., the matrix clause in the indicated sentences may contain semantically congruent adverbial phrases (but nominal as well) which convey a speaker's or a third party's attitude towards the content of the dependent clause.

On the other hand, Sesar (1987) treats the indicated devices as adjectives, functioning as the nominal predicates controlling the infinitive or subject clause.[107] The modal predicates in the sentences of this type relate to the specific form of the adjectives occurring in the Sg gender-neutral form (e.g. *vjerojatno, jasno, očito, moguće,* etc.). The author admits, however, that due to their surface features, the given adjectives may equally be treated as manner adverbs conveying the same modal meaning, which essentially overrides their status as either adjectives or adverbs.

[107] The two may be illustrated by the following examples taken from Sesar (1987, pp. 173-174): *To nije bilo moguće razumjeti* (infinitive) and *Bilo bi neprilično da sam traži večeru* (subject clause).

The adverb status of the given expressions may be supported against the corresponding clauses with the verbs of speaking or cognition, as in *moguće je pretpostaviti/vjerovati/reći, etc. da...* In that sense, the adverbs may be understood as the eliptical forms of a longer "metalinguistic comment" (Hoye, 1997, p. 180). Against this background and in line with Pranjković's (2001) account on the complement clauses in Croatian, the present analysis treats *vjerojatno* and *moguće* in occurrences such as (160-161) as adverbs, i.e. adverb phrases.

Congruent to the use of polysemous English adjective *possible*, the adverb *moguće* may render both epistemic and dynamic readings. The Crocor findings show that the respective meanings of the adverb are contingent on the syntactic pattern in which it occurs. As can be seen in example (160), followed by a *da*-complement clause, the adverb (or adverb phrase) *moguće (je)* signals an epistemic assessment. By contrast, in sentence (162) below, the adverb is followed by the infinitive, which renders its dynamic meaning. This can be illustrated by the following paraphrase: '(x) može/je u mogućnosti predvidjeti...' (Engl. '(x) can predict/it is possible (for x) to predict'.

> 162. *Osim crta ličnosti istraživanja pokazuju da je radnu izvedbu moguće predvidjeti i na temelju stavova prema radu i organizaciji.* (PT5)

In other words, the present meaning of the adverb points to anyone's ability or capacity to predict a certain state of affairs. Given that the present study focuses only on epistemic modality, the dynamic readings of the given adverb were excluded from the analysis.

In addition, with respect to the adverb *vjerojatno*, congruent to the instances in which the English comparative form of *likely* points to a subject's tendencies or inclinations towards certain behaviour, examples such as (163) were excluded from the analysis:

163. *Poznato je da su mlađi učenici, a osobito djevojčice, "poslušniji" u obavljanju školskih obaveza i domaćih zadaća, pa vjerojatnije ustraju u učenju gradiva koje sami procjenjuju dosadnim i nekorisnim.* (DI10)

The meaning of *vjerojatno* in example (163) may be interpreted against the meaning of the synonymous adjective *sklon*, as in: '*skloniji su ustrajanju u učenju...*' *(*Engl. *they tend to be more persistent in studying...*), which does not seem to render the notion of an epistemic judgment.

Finally, with respect to the adjectives conveying epistemic meanings, the information available in the Croatian grammars is even more limited than is the case with the modal particles and adverbs. In that sense, the subsequent characterization of the devices in question relies heavily on the characterization of their previously identified cognates in Engcor. The typical exponent of the epistemic adjectives in Crocor is the adjective *moguć*, whose epistemic reading may be exemplified in the following sentence:

164. *Jedno od mogućih objašnjenja dobivenih rezultata jest da mladići i djevojke ostvaruju osjećaj bliskosti kroz različite oblike odnosa.* (PT8)

The epistemic reading of the adjective may be illustrated by the following paraphrase: 'moguće je da je to jedno od objašnjenja' (Engl. 'it is possible that it is one of the explanations for the given findings'). However, congruent to its English cognate *possible*, the Croatian adjective *moguć* may also convey the dynamic modal meanings, as shown in:

165. *Tako se prilagođen upitnik sastojao od 13 čestica, a mogući je raspon rezultata bio od 0 do 39.* (PT6)

While in example (164), the epistemic use of the adjective suggests the writer's evaluation of the given subject matter, the use of the same adjective in (165) simply points to the objective circumstances, rendering thus a circumstantial (neutral) dynamic reading (Palmer,

1990). The instances of the dynamic meaning of the given adjective were also excluded from the analysis.

The aim of the preceding discussion was to point to some major aspects of the status and use of the epistemic particles, adverbs and adjectives examined in the analysis of the Croatian data. However, prior to the outline and discussion of the corpus findings, it is important to draw attention to the specific epistemic markers included in the analysis. As can be seen in the example sentences outlined in this section, the choice of both epistemic particles and adjectives in Crocor was extremely limited. This is not all too surprising given that epistemic adverbs and adjectives represent a closed set of a rather delimited number of items, as reported in previous literature on English modality (Palmer, 1990; Nuyts, 2001) but also cross-linguistically (Trbojević-Milošević, 2004). The list of the possible candidates included in the analysis was based on several sources, including the cited contemporary Croatian grammars (Silić & Pranjković, 2005; Barić et al., 2005; Težak & Babić, 2009), and other publications dealing with academic writing in Croatian (Kalogjera, 1982; Sesar, 1987; Sesar, 1992; Silić, 2008; Jurčić Katunar, 2011; Gačić, 2012). In addition, the items included in the study were checked against the list of the congruent epistemic devices in relevant research on academic writing in English (Vartalla, 2001; Hyland, 2005a; Biber, 2006a; Hyland, 2008).

Disregarding for a moment the gender markers, the final list of the Croatian epistemic devices examined in the present chapter included the following items: VJEROJATNO (particle), MOŽDA (particle), VALJDA (particle), MOGUĆ (adjective), MOGUĆE (adverb), VJEROJATAN (adjective), VJEROJATNO (particle/adverb), PLAUZIBILNO (adverb). In order not to crumble the analysis into too many categories, which admittedly consist of very few devices, the categories adopted here include epistemic particles and epistemic adjectives. The former comprises the single-word particles and the

adverbs occurring as antecedents of a *da*-complement clause. For the purposes of the present study, this seems to be justified by the fact that both the particles and the given adverbs express a writer's stance towards the propositional content, the former with respect to the whole sentence and the latter to the content of the complement clause. However, given the previously discussed role of the comparable construction in English, the adverbs occurring as antecedents of *da*-complement clauses are discussed separately here. In addition, in order to explore to what extent this pattern is salient in conveying epistemic stance in Crocor and how it compares to the obtained findings of the congruent English pattern, the frequency counts of the given pattern are also provided separately. The subsequent section deals with the outline and discussion of the corpus findings of each respective category.

5.2.2 Overall findings of the epistemic adverbs and adjectives in Crocor. As can be seen in Figure 7, with respect to the IMRAD structure, the corpus findings show similar patterns of distribution of both epistemic particles/adverbs and adjectives, with the highest frequencies clustered in the Discussion section (n/1000 = 3,05), while in the remaining RA sections their frequency was generally considerably lower (cf. Table B2, Appendix 12). The overall distribution of the given epistemic devices is as broadly expected, conforming to the rhetorical functions of the RA sections. The only exception in that respect is related to a relatively low frequency of the given devices in the Introduction section (n/1000 = 0, 76), which was closer to their frequencies in the prevalently descriptive Method (n/1000 = 0, 30) and Results (n/1000 = 0, 31) sections as compared to the Discussion section which would be perhaps more expected given a more argumentative nature of the initial and final RA section. Apparently, Croatian psychology writers do not engage in conveying epistemic stance in the Introduction section by means of the given devices. The extent to which the

Introduction section in the Crocor RAs is a rhetorically interpretative section in terms of the phenomenon explored here remains to be seen in the remainder of the analysis.

While the two categories of epistemic devices show relatively similar frequencies in the first three RA sections, the most notable discrepancy of the findings was recorded in the Discussion section, with the particles/adverbs being strikingly more frequently employed (n/1000 = 2, 43) than the adjectives (n/1000 = 0, 62). However, if we take a look at the overall frequencies of the individual categories of the epistemic devices, we can see that the frequency of the epistemic adverbs (n/1000 = 0, 52) accounted for over a half of the overall frequency of the particle/adverb category (n/1000 = 0, 93). Indeed, the findings show that compared to the epistemic particles (n/1000 = 0, 41) and adjectives (n/1000 = 0, 37), the epistemic adverbs represent the most frequent category of epistemic devices explored in this chapter (Tables B2 and B3, Appendix 12).

In addition, the Crocor findings show that in each category of the epistemic devices there is a single marker that stands out in frequency, with *vjerojatno* (n/1000 = 0, 28), *moguće je (da)* (n/1000 = 0, 47) and *moguć* (n/1000 = 0, 33) being the most salient exponents in their respective categories. Each of the categories is dealt with in turn.

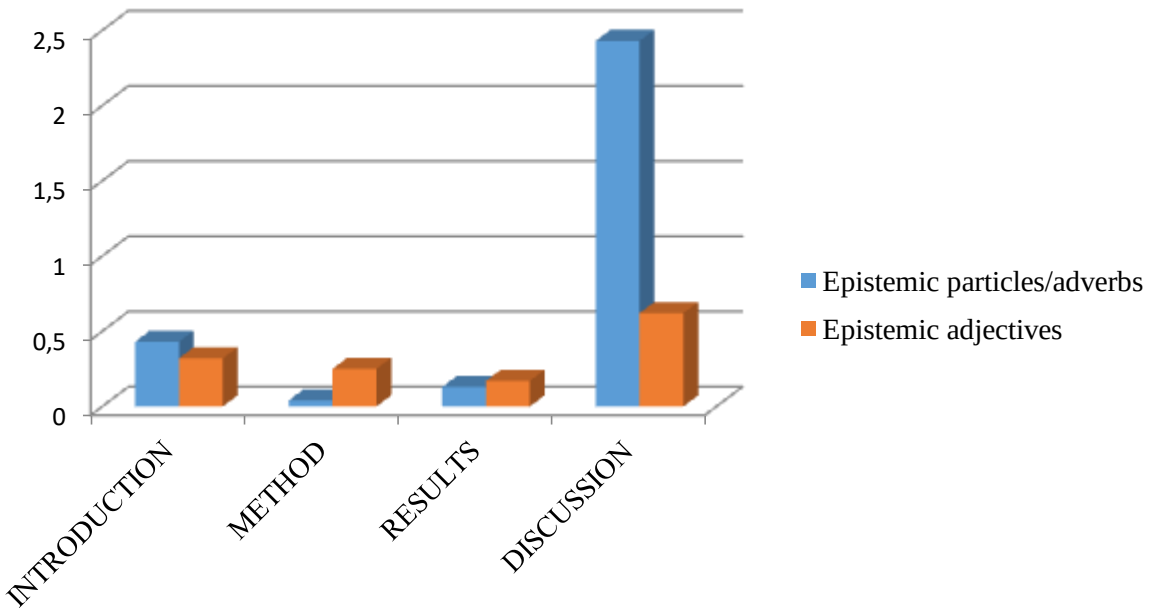

Figure 7. Distribution of the epistemic particles/adverbs and adjectives across IMRAD in Crocor

5.2.3 Discussion of the corpus findings for the epistemic particles. As can be seen in Table B2 (Appendix 12), the use of modal particles conveying epistemic meaning in the Croatian corpus of RAs in psychology was predominantly centered around the use of the particle *vjerojatno* (n/1000 = 0, 28), followed by *možda* (n/1000 = 0, 08), *moguće* (n/1000 = 0, 03) and *plauzibilno* (n/1000 = 0, 006), all of which were used significantly less frequently compared to *vjerojatno*. In addition, the corpus findings showed zero occurrences of *valjda*, which seems to be in line with the low frequency of this particle in the academic textbook genre as reported in the *Frequency Dictionary of Croatian*[108] (Moguš, Bratanić, & Tadić, 1999).

[108] Hrvatski čestotni rječnik (Moguš, Bratanić & Tadić, 1999).

With respect to the distribution of the modal particles across the IMRAD structure, the findings show that they were predominantly used in the Discussion section, and considerably less in the remaining sections, with the exception of the Method where no occurrences of the epistemic particles were recorded. As previously discussed, a density of the epistemic devices, including the epistemic particles in the Discussion section reflects its predominantly interpretative nature. It is in this part of a research article that writers comment on the results of their research, which often entails tentativeness in structuring the claims, as shown in the following example:

> 166. *Razlike između mlađih i sredovječnih odraslih nisu utvrđene, možda zato što su i jedni i drugi, bez obzira na razlike u svojoj kronološkoj dobi u vrijeme ispitivanja fertilitetne motivacije, svoju fertilitetnu odluku većinom donijeli vjerojatno u istom razdoblju, tj. u mlađoj odrasloj dobi. Dakle, vjerojatno je slična dob u kojoj su donijeli fertilitetnu odluku utjecala na sličnu zastupljenost na ovaj način ispitanih fertilitetnih motiva u osoba mlađe i srednje odrasle dobi.* (DI9)

In addition, modal particles might be used in providing cautious evaluations of previous research (167) or making tentative suggestions for upgrading the current research (168), as in:

> 167. *U ranijim je istraživanjima važnost nadzora vjerojatno određena i metodama koje su korištene. Npr. Patterson i sur. (1992) naglašavali su značenje negativnoga roditeljstva u djetinjstvu za rano javljanje i neadekvatnoga nadzora u predadolescenciji za kasno javljanje.* (PT9)

> 168. *Prema tome, možda bismo uključivanjem dodatnih intra- i interpersonalnih varijabli u čijoj se podlozi ne nalazi kompetentnost dobili jasniju sliku prirode antecedenata pojedinog tipa cilja postignuća.* (SP3)

Alternatively, modal particles may be used in the moves concerned with acknowledging the limitations of the research. The use of the modal devices, such as *vjerojatno* in (169) softens

the assertiveness of the claim, and is probably motivated by the writer's desire not to impose a personal judgment on readers but leave them an option to judge for themselves.

> 169. *Uz ograničenja koja se odnose na nereprezentativan uzorak i sumnju u socijalno poželjno odgovaranje, vjerojatno je glavno ograničenje ovoga istraživanja to što je provedeno kao retrospektivno.* (DI9)

Occasionally, the modal particles may occur in harmonic combinations with other modal devices, such as the particle *moguće* and the epistemic modal noun *mogućnost* (co-occurring with the existence verb *postojati*) controlling a *da*-complement clause in the example below:

> 170. *Moguće je i prikupljanje podataka tijekom nastave utjecalo na rezultate jer postoji mogućnost da je sama prisutnost vršnjaka, ali i njihovo neverbalno ponašanje, utjecalo na odgovore.* (PT9)

As can be seen, the particle *moguće* is used as an elliptical form of the longer phrase followed by the complement clause: *moguće je da (je prikupljanje podatka...).*

5.2.4 Discussion of the corpus findings for the epistemic adverbs. As previously noted, the Crocor findings show that compared to the epistemic particles and adjectives, the adverb phrase *moguće je/vjerojatno je* functioning as an antecedent of a *da*-complement clause is the most frequently employed category of the epistemic devices encompassed in the present chapter.

Furthermore, the findings point to a significantly higher frequency of *moguće je* (n/1000 = 0, 47) as compared to *vjerojatno je* (n/1000 = 0, 04) in the corpus as a whole. Moreover, the epistemic adverb *moguće* used in the given pattern is the most frequently employed device of all particles/adverbs and adjectives in Crocor, which suggests its salient role in the present disciplinary writing. Indeed, given the congruent status of its English

equivalent ‘it is possible (that)’, it might be regarded as the typical lexical bundle in Crocor. However, its potential status as a typical multi-word expression in academic writing in Croatian awaits confirmation by a much larger-scale corpus-based exploration of the Croatian academic discourse.

As expected, the findings point to the prevalent use of *moguće je* particularly in the Discussion section (n/1000 = 1, 24). It is mostly tied to writers’ interpretations of the possible reasons underlying the specifics of the research findings, or general implications of their research results, as shown in:

> 171. *Pretpostavljamo da je u skupini niske razine društveno neprihvatljivoga ponašanja važniji neki zajednički zaštitni čimbenik (npr. kvaliteta odnosa u obitelji) dok je moguće da su u skupini s ranim javljanjem eventualni negativni učinci rizičnosti braće djelovali ranije tijekom razvoja...* (PT9)

> 172. *Moguće je da objašnjavanje pozitivnih događaja uzrocima kao što su sposobnosti ili trud pridonosi osjećaju vlastite vrijednosti, samoefikasnosti i kontrole nad događajima te na taj način štiti mladiće od depresivnosti.* (PT6)

Vjerojatno je may also be encountered in similar contexts, though entailing a higher level of commitment to the propositional content, as shown in:

> 173. *Recentna metaanalitička studija Raabea i Beelmanna (2011.) pokazuje da, čini se, u međugrupnim stavovima nema sustavnih razlika u razdoblju adolescencije, što je dobni uzorak i u našemistraživanju. Stoga je vjerojatno da je riječ o specifičnim povezanostima ove varijable s drugim prediktorima u manjinskom uzorku, barem kada je riječ o stavu prema školskoj integraciji.* (DI2)

Overall, it might be assumed that the saliency of the given pattern in Crocor may be accounted for by its core characteristics which are congruent to the previously discussed extraposed *that*-clause in English. As noted, the given clause type allows writers to express their personal views towards the propositional content, while remaining in the background

as the sources of judgment. Using an impersonal surface linguistic form to express or report on a personal stance conforms well to the prevalently depersonalized characterization of the scientific style in Croatian.

5.2.5 Discussion of the corpus findings for the epistemic adjectives. With respect to the distribution of the epistemic adjectives, the corpus findings point to the prevalent use of the single adjective *moguć* (n/1000 = 0, 33), whereas *vjerojatan* was used significantly less frequently (n/1000 = 0, 04). As the findings show, the adjective *plauzibilan* showed no occurrences in Crocor. Congruent to the use of the particles, the epistemic adjectives occurred prevalently in the Discussion (n/1000 = 0, 62), and considerably less in the Introduction section (n/1000 = 0, 32), while their use in the remaining two RA sections was rather limited (Table B3, Appendix 12).

The Crocor data show that the use of epistemic adjectives is particularly concerned with the moves in which writers interpret findings of their research and speculate about the possibilities leading to a particular state of affairs. This is particularly vivid in the case of the attributively used adjective *moguć* co-occurring with the nouns such as *objašnjenje, razlog, uzrok*,[109] as shown below:

> 174. *Dobiveni rezultati također pokazuju da mladići sa zaokupljenom privrženošću procjenjuju otuđenost od oca značajno višom od djevojaka s istim stilom privrženosti. Jedno je od mogućih objašnjenja dobivenih razlika spolno specifična socijalizacija.* (PT8)
>
> 175. *Mogući razlog ove slabe povezanosti jest taj što je koncept generativnosti mnogo širi od motivacije za roditeljstvo te je moguće da roditeljstvo u nekim slučajevima čak i ometa realizaciju nekih generativnih težnji, primjerice, u slučaju*

[109] In order of appearance: *explanation, reason, cause.*

onih pojedinaca koji uime šire brige za mlađe naraštaje i društvenu zajednicu zanemaruju vlastitu djecu. (DI9)

Alternatively, the given adjective may be used in the moves concerned with writers' explicit indications of limitations or weaknesses with respect to their research design, methodology or similar segments of the research process:

176. *No, prije donošenja krajnjeg zaključka o prirodi središnjeg izvršitelja treba imati na umu i ograničenja koja se mogu pripisati ovdje dobivenim nalazima. Glavno moguće ograničenje ovih rezultata jest da je korišten prelagan verbalni zadatak za čije su obavljanje potrebni toliko mali resursi da njegova pripadnost istoj domeni kao i primarni zadatak nije mogla biti nikakva prepreka za uspješno rješavanje oba zadatka istovremeno.* (SP9)

In addition to the subjective epistemic evaluations, which are particularly frequent in the Discussion section, epistemic adjectives may be used intersubjectively, as shown in the following examples:

177. *Iz perspektive dijateza stres modela moguć je uzrok spolnih razlika u depresivnosti da žene i djevojke doživljavaju više stresa te da imaju izraženije kognitivne tendencije koje su rizične za razvoj depresivnosti.* (PT6)

178. *Međutim, učinci nezaposlenosti vjerojatno nisu jednaki za sve skupine nezaposlenih, jer, osim kontekstualnih, postoje i osobni čimbenici koji mogu moderirati utjecaj nezaposlenosti na zdravstveno stanje pojedinaca. A jedan vrlo vjerojatan osobni moderator je dob nezaposlenih osoba.* (SP8)

In the above examples, the contextual clues make it clear that a writer is not providing subjective speculations but is rather referring to the shared disciplinary assumptions. One of my informants argued that in such cases the epistemic devices refer to the possibilities which presumably exist but cannot be personally controlled. With respect to example (178), it can be noticed that the amplifier *vrlo* increases the degree of epistemic certainty signaled

by the adjective, yet still indicating a non-factual status of the claim (Trbojević-Milošević, 2004).

Congruent to the use of epistemic particles, epistemic adjectives may also occur in harmonic combinations with other epistemic devices, as signaled by the adverb phrase *moguće je* in example (175). Additionally, it is not uncommon to find occurrences of epistemic adjectives and the modal verb *moći* in the same sentences, as illustrated in example (179):

> 179. *Jedno od mogućih objašnjenja dobivenih rezultata može biti to da se ekstrovertirani pojedinci u većoj mjeri druže i razvijaju odnose s potencijalnim alternativnim partnerima te time ugrožavaju odnos s aktualnim bračnim partnerom (Shiota i Levenson, 2007).* (PT1)

The presence of the modal further underscores the tentativeness of the claim, indicating that that what is proposed should be treated as one of the possible interpretations of the findings. A cumulative hedging effect produced by the modal may be best noticed if replaced by the verb *biti* (Engl. *to be*), yielding the following: *Jedno od mogućih objašnjenja dobivenih rezultata je to da se ekstrovertirani pojedinci...*As can be seen, the absence of the modal conveys a writer's higher degree of certainty, making the claim more assertive.

5.3 Comparison of the Engcor and Crocor findings

The final section in this chapter deals with the outline of the comparative findings between the frequencies of the distinctive categories of the epistemic devices in Engcor and Crocor. As with the modal verbs, the aim of the present section is to identify the patterns of similarities and differences in the use of epistemic devices in the two corpora and to gain insight into the salient patterns of conveying epistemic judgments in the disciplinary writing

explored here. As previously noted, a more detailed discussion on the cross-cultural patterns in the use of all epistemic markers investigated in the present study awaits the General discussion.

It should be noted that due to the incongruence between the categories across the two corpora, the presentation of the findings is provided along the following categories: Crocor epistemic adjectives vs. attributive Engcor epistemic adjectives; Crocor adverbs followed by a *da*-complement clause vs. Engcor adjectives followed by a *that*-complement clause; Crocor particles vs. Engcor adverbs. The frequency of the predicatively used epistemic adjectives followed by a *to*-infinitive is at present left out from the comparative findings due to the lack of the equivalent form conveying epistemic meanings in Croatian. Figure 8 provides the comparative findings of each respective category of the epistemic devices in the two corpora.

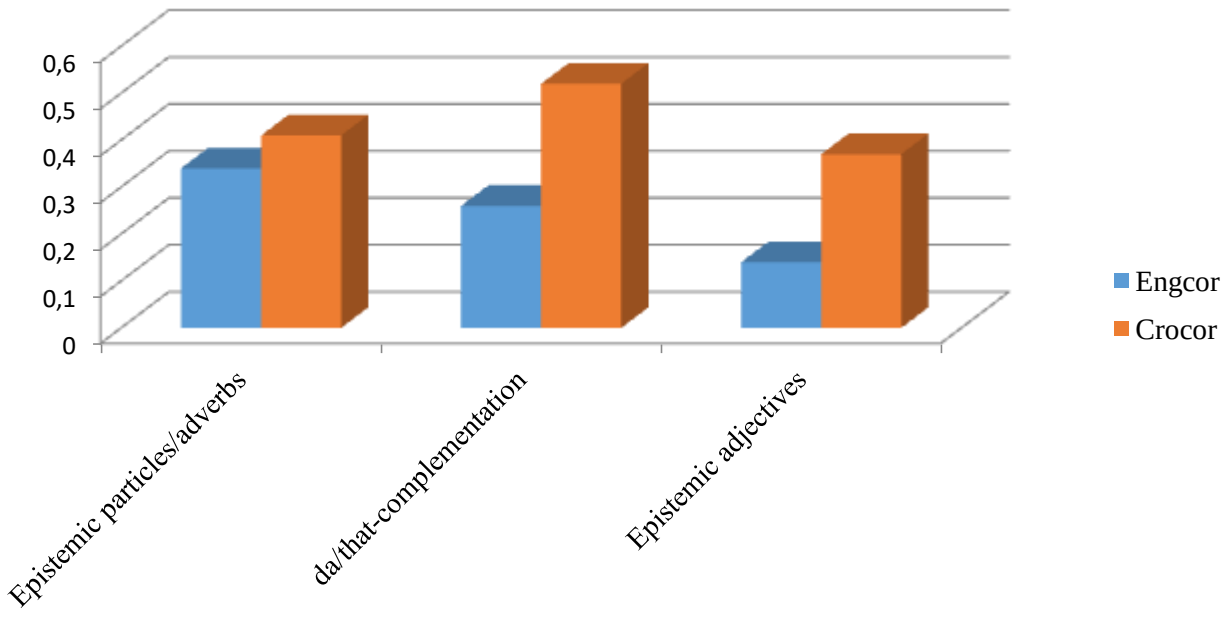

Figure 8. Distribution of the epistemic adverbs and adjectives across IMRAD in Engcor and Crocor

As can be seen, the overall comparable findings point to the higher frequencies of all three categories of the epistemic devices in Crocor as compared to Engcor. The lowest discrepancy of the results concerns the use of the single-word epistemic particles and adverbs, whereby the Croatian particles showed 0, 41 occurrences and English adverbs 0, 34 occurrences per 1000 words. The highest discrepancy of the results was recorded with respect to the use of the epistemic adjectives in *da-/that*-complementation. The findings show that the Croatian writers used 0, 52 epistemic adverbs in this pattern as compared to the English writers who used 0, 26 adjectives per 1000 words. With respect to the attributively used epistemic adjectives, the results point to their higher frequency in Crocor (n/1000 = 0, 37) in comparison to Engcor (n/1000 = 0, 14).

At present, the obtained results may only be accounted for in terms of the conventionalized language use in the two instances of academic writing cultures. Apparently, the highest frequency of the epistemic adverbs followed by a *da*-complement clause in Crocor suggests that Croatian psychology writers find this pattern as most convenient for conveying epistemic stance concerning the epistemic devices encompassed in the present category. By comparison, though frequent in number in Engcor, the congruent English pattern is less salient in Engcor. However, if we take into account that English epistemic adjectives may convey epistemic readings when followed by a *to*-infinitive, then the discrepancy between the Crocor (n/1000 = 0, 52) and Engcor (n/1000 = 0, 40) findings is relatively lower. At the level of the individual devices, the findings point to some striking similarities in the use of the epistemic devices between the two sub-corpora. Table 4 shows the distribution of the first two most frequent Engcor and Crocor devices in each category examined here:

Table 4

The most frequent epistemic adverbs, particles, and adjectives in Engcor and Crocor

	Epistemic device n/1000	**Epistemic device n/1000**
English adverbs	Likely (0,14)	Perhaps (0,08)
Croatian particles	Vjerojatno (0,28)	Možda (0,08)
English adjectives in attributive use	Possible (0,10)	Likely (0,03)
Croatian adjectives in attributive use	Moguć (0,33)	Vjerojatan (0,04)
English adjectives followed by *that*-extraposed clause	It is possible that (0,15)	It is likely that (0,07)
Croatian adverbs followed by *da*-complement clause	Moguće je (da) (0,47)	Vjerojatno je (da) (0,04)

The first similarity in the use of the given epistemic devices is the fact that both Engcor and Crocor writers resort to a very limited number of devices in each respective category. The findings point that in each category there are two central devices, while the frequency of the others is either non-existent or negligible. In addition, in both the English and Croatian sub-corpus, writers tend to show preference towards a single epistemic marker, the frequency of which is in most cases significantly higher as compared to the second device. As can be seen, these discrepancies are higher in Crocor as compared to Engcor. Interestingly enough, the findings show equivalency in the most frequent devices across the two sub-corpora. For instance, the most frequent adverb in Engcor is *likely*, while in Crocor the most frequent particle is *vjerojatno*, etc. In addition, if we compare the saliency of the possibility and likelihood markers, in both sub-corpora the frequency of the possibility markers is

significantly higher as compared to that of likelihood. As previously noted, this suggests that the use of the given devices expressing epistemic judgments in terms of possibilities seems to be more salient for both English and Croatian psychology writers than assessments of likelihood.

6. Epistemic nouns

The epistemic nouns belong to a wider repertoire of stance nouns that academic writers use to convey attitudes towards the propositional content (Biber et al., 1999; Charles, 2007; Jiang & Hyland, 2015). The core exponent of an epistemic modal noun in English is the noun *possibility*, as illustrated in the following example:

> 180. *Another possibility is that risk for suicide might vary based on the function of NSSI.* (PID5)

The epistemic status of the given noun can be easily identified by a paraphrase with an alternative modal device, i.e. the epistemic adjective *possible* in case of English (e.g. It is also possible that risk for suicide...). As Schmid (2000) argues, the modal nouns are morphologically related to modal adjectives (e.g. *possible-possibility; probable-probability*), while their semantics is related to modal verbs, both of which can be exploited in the characterization of the modal noun uses.

At the outset, it should be noted that in Nuyts' (2001) taxonomy of the epistemic modal devices, broadly adopted in the present study, nouns are not treated as the central epistemic exponents and therefore not subjected to detailed analysis. The author does not elaborate much on it and only asserts that nouns are excluded from the analysis due to their relative infrequency. Indeed, some analysts point to a relatively neglected status of epistemic nouns in research on modality generally (Schmid, 2000), but also in academic discourse (Hyland, 1998; Flowerdew, 2003; Jiang & Hyland, 2015). For instance, nouns have been either explicitly excluded from the analysis of stance markers (Biber & Finegan, 1989) and hedges (Šinkūnienė, 2011) or only recognized without more detailed consideration (Trbojević-Milošević, 2004), particularly due to their semantic correspondence to more central epistemic adjectives (Perkins, 1983).

However, as discussed below, recent studies do recognize an indispensible role of the nominal expressions used to convey stance both in speech or writing (Schmid, 2000; Charles, 2007). With respect to academic writing, studying the pragmatics of nouns seems to be relevant, particularly given its characterization as a highly nominalized style (Biber & Gray, 2010; Jiang & Hyland, 2015). The section which follows outlines the major linguistic characteristics of the nouns under study, with a particular focus on *that*-complementation as the primary focus of the present analysis.

6.1 General characterization of epistemic nouns in English

Unlike the epistemic modal devices discussed so far, epistemic nouns have been characterized under different labels, such as 'modal nominal expressions' (Perkins, 1983); 'stance nouns' (Biber, 2006a; Jiang & Hyland, 2015); 'signalling nouns' (Flowerdew, 2003); 'shell nouns' (Schmid, 2000). Perkins (1983) claims that modal nominal expressions mark the highest degree of objectification of modality, adding that they allow more diversified modifications in modal relationships as compared to other modal devices. Biber (2006a) refers to stance nouns as the lexical means controlling complement clauses, which in turn represent one of the grammatical categories for marking a writer's (or speaker's) stance towards the proposition. Similarly, for Jiang and Hyland (2015) stance nouns are conceptualized as nouns conveying the authorial perspective on the content of the complement clause that follows. The latter may have the form of a *that*-clause, an *of*-propositional clause and a *to*-infinitive clause.

That-complementation has been attested as a particularly salient pattern for conveying stance in academic writing, particularly in the soft sciences (Jiang & Hyland, 2015). Indeed, according to Biber et al. (1999), head nouns taking a *that* clause are one of

the primary means for marking stance in academic prose, especially for marking a degree of certainty towards the proposition that follows. The saliency of such constructions in academic writing is primarily driven by the fact that they allow conveying a personal stance while at the same time backgrounding the source of the evaluation. This generally complies well with the impersonal scientific communication and its predominant focus on the information rather than agents as their carriers (Biber et al., 1999). According to Schmid (2000), a Noun-complementation structure allows writers to pack a lengthy piece of information expressed in the accompanying clause into a single noun, i.e. to summarize its gist. In other words, by the process of nominalization an event is encapsulated into an object i.e. a noun (Halliday & Martin, 1993).[110] For instance, in the following sentence:

> 181. *A second possibility is that individuals who have more social contact with gay men experience greater diversity and are therefore less likely to apply stereotypes.* (JPSP9)

the process of assessing that '*individuals who have more social contact with gay men may experience greater diversity and therefore be less likely to apply stereotypes*' is turned into a thing-like quality encapsulated into the epistemic noun *possibility*. Thus, as Schmid (2000, p. 367) claims "nouns create the illusion that what they stand for is similar to a 'thing' with respect to stability in time and conceptual unity," the latter being the defining properties of nouns in cognitive grammar (Belaj & Tanacković Faletar, 2014).

[110] According to Halliday and Martin (1993), the birth of science is semiotically connected to the emergence of the grammatical metaphor, i.e. nominalization, whereby the processes or events construed by verbs are reconstructed in the forms of the nouns. Given that the prototypical meaning of a noun is a thing, the nominalization construes phenomena as if they were things or objects. The authors go on to suggest that this process is particularly important for the language of science because it enables reality to be reconstrued as "an edifice of things" (p.17). In other words, "it holds reality still, to be kept under observation and experimented with; and in so doing, interprets it not as changing with time (as the grammar of clauses interprets it) but as persisting—or rather, persistence—through time, which is the mode of being of a noun" (p. 17). It is worth noting that one of the functional contributions of the nominalization process in the language of science was the development of technical terminology (Halliday & Martin, 1993).

The choice of the stance noun enables a writer to foreground his or her position towards the content and indicate how it is to be interpreted by readers (Charles, 2007; Jiang & Hyland, 2015). Thus, in sentence (181), by choosing the epistemic noun *possibility*, which entails a medium rather than a high degree of certainty (e.g. *fact*), the writer signals a degree of certainty he or she is prepared to attach to the content of the *that*-clause. In that sense, epistemic nouns such as *possibility* may be regarded as additional means writers have at their disposal to convey a hedged stance towards their claims (Hyland, 1998; Vihla, 1999; Vartalla, 2001).

With respect to the selection of the nouns used in the analysis of the English data, the current study is primarily based on Schmid's (2000) taxonomy of modal shell nouns,[111] particularly because it provides a final list of the member nouns in each category. The category of modal nouns includes the nouns referring to deontic (e.g. *permission, necessity*), dynamic (e.g. *ability, tendency*), and epistemic modality, the latter being solely the focus of the present analysis. According to Schmid, modal nouns shell speakers' judgments on the possibility, probability or certainty of the propositional content. The author goes on to argue that unlike modal verbs whose polysemous meanings may give rise to ambiguity (e.g. the modal verb *must* may denote both epistemic and deontic readings, as in: *He must be at home now*), in case of the modal nouns ambiguity is resolved by the existence of the distinctive nouns, as shown in the following sentences:

a) *There is a good chance that he is at home now* (epistemic certainty)

b) *He has the obligation to be at home now* (deontic obligation)

[111] Schmid (2000) distinguishes between five broad categories of shell nouns, each determined by shared semantic components of its members (e.g. Factual, Mental, Linguistic, Modal, and Eventive group).

There are, however, instances when the identical nominal form may be used to express distinctive modal meanings, but the syntactic pattern in which the noun occurs makes the intended reading rather straightforward (Schmid, 2000). For instance, in example (182) below, when used in a *that*-complementation clause, the noun *chance* conveys epistemic meaning, indicating the speaker's assessment of a possibility that *the behavioral rejection would be perceived as mild*. On the other hand, followed by a *to*-infinitive clause in example (183), the reading of *chance* is rather dynamic, indicating circumstances in which it is possible to *win a $50 prize.*

> 182. *Third, because anxious solitary children are likely to be especially sensitive to rejection (London, Downey, Bonica, & Paltin, 2007), we aimed to construct an experimental situation that would increase the chances that the behavioral rejection would be perceived as mild.* (DP3)

> 183. *The interviewer would choose one of the two applicants to be his or her partner during the second phase of the study, and the two would have a chance to win a $50 prize.* (JPSP10)

In Schmid's (2000) taxonomy, epistemic modal nouns comprise three major subcategories depending on the scalar epistemic meanings. Thus, the lowest degree is indicated by the Possibility family (e.g. *possibility, chance, risk, danger, uncertainty*), middle by the Probability family (e.g. *probability, likelihood, chance*), while the Certainty family encompasses the nouns signalling the highest degree of the speaker's commitment (e.g. *certainty, truth*). In line with the scope of the present study, the analysis focuses only on the Possibility and Probability group of nouns.[112] It should be noted, however, that not all nouns included in this taxonomy were relevant to this study due to its limitation to a specific type

[112] In the proposed taxonomy, the boundaries between the categories are rather fuzzy, whereby some of the members, due to their polysemous meanings may occur in both categories (e.g. *chance*).

of discourse. Excluding the nouns such as *danger*, *risk*, and *chance*[113] the final list included the following candidate nouns: *possibility*, *likelihood*, and *probability*. Except for the latter, the status of the given nouns was confirmed by consulting the available lists of the epistemic nouns in previous research on stance nouns in academic writing (Biber, 2006a; Charles, 2007; Jiang & Hyland, 2015). Thus, according to Charles's (2007) taxonomy, epistemic nouns are classified in the Possibility group of stance nouns which denote how (un)likely something is (e.g. *possibility, danger, chance*). In addition, in Jiang and Hyland's (2015) taxonomy, epistemic nouns examined here belong to the broad group of nouns that describe attributes towards entities, in particular evaluation or judgments concerning their status. These, in turn, concern judgments on the epistemic, dynamic, and deontic modality, encompassing the previously illustrated nouns. The section that follows outlines the Engcor findings.

6.1.1 Overall findings of the epistemic nouns in Engcor. At the outset, it should be noted that the list of the epistemic nouns examined here is most limited as compared to previously analyzed epistemic devices (cf. Table A5, Appendix 12). As can be seen in Table 5 below, the findings point to only two epistemic nouns being used by Engcor writers in the syntactic pattern examined here, viz. *possibility* and *likelihood*. The present findings show that 100% of the given nouns were singular, and 67% definite, which is generally in line with a tendency of head nouns taking *that*-complement clauses to be singular and definite (Biber et al., 1999).

[113] These nouns are quite unlikely to occur as signals of epistemic evaluations in academic writing.

As the corpus findings indicate[114], *possibility* is a more central epistemic noun than *likelihood* in Engcor, accounting for 0, 15 occurrences per 1000 words as compared to 0, 07 occurrences of *likelihood*. In that respect, the present findings are in line with previous research which points to the saliency of the noun *possibility* in academic writing (Hyland, 1998; Biber et al., 1999; Vartalla, 2001; Jiang & Hyland, 2015).[115] As can be seen, the noun was most frequently used in the Discussion (n/1000 = 0, 23), followed by the Introduction (n/1000 = 0, 20), and the Result (n/1000 = 0, 11), while the lowest frequency of occurrences was recorded in the Method section (n/1000 = 0, 07).

Table 5

Normalized frequencies of the epistemic nouns across IMRAD in Engcor

	INTRODUCTION n/1000	**METHOD** n/1000	**RESULTS** n/1000	**DISCUSSION** n/1000	**TOTAL per item** n/1000
Possibility	0,20	0,07	0,11	0,23	**0,15**
Likelihood	0,04	0,01	0,15	0,05	**0,07**
Total per section	**0,25**	**0,09**	**0,26**	**0,28**	**0,23**

The present findings fully support Schmid's (2000) observation that the noun *possibility* does not typically occur with the definite article in the pattern *N-be-that* but tends to be accompanied by the comparative forms such as *one, another*, etc. Though not exclusively,

[114] The overall raw and normalized frequencies of the epistemic nouns examined in Engcor can be found in Table A5 (Appendix 12).

[115] For example, according to Jiang and Hyland's (2015) findings, the noun *possibility* is ranked in the top 10 most frequent stance nouns in 4 out of 8 scientific disciplines examined.

the occurrences of this type are frequently used to indicate subjective epistemic evaluations. They are mostly used in the Discussion section in which writers attempt to account for the specific aspects of the research results, suggesting that their interpretations may be among the possible ones. For instance, in example (184), the subjective reading of the given construction is clearly supported by the presence of the overt signal of a writer's voice in the previous sentence (i.e. the personal pronoun):

> 184. *This finding might be due to low-wage, unstable, or psychologically stressful parental employment (Kalil & Ziol-Guest, 2005). However, we are not certain about the reason why household income, instead of maternal education, was significantly associated with membership in school engagement trajectories. One possibility is that these two indicators of SES were highly correlated.* (DP10)

However, when used in the *N-Cl* pattern (Schmid, 2000) the noun *possibility* does co-occur with the definite article. Example (185) is the case in point:

> 185. *In the present research program, we also investigate the possibility that characteristics of the perceiver interact with target features to determine judgments of sexual orientation.* (JPSP9)

The definite article signals that the information is presented as given, so that the readers are put in the position to accept rather than dispute it. This, in turn, might be regarded as a rhetorical strategy by means of which writers aim to build a consensus with the readers, suggesting thus shared responsibility for the proposed claims (Biber et al., 1999; Charles, 2007).

As is the case with other modal devices, the epistemic noun *possibility* may occur in modal harmonic combinations. For instance, in the sentence (186) below, the writer's reduced degree of commitment towards the content of the complement clause, as signaled by the noun, is further weakened by the presence of the modal *may*.

186. *Another possibility may be that avoidant emotions, such as disgust and fear, provoke anger and aggression when the actor is unable to get out of the threatening situation.* (JPSP6)

Alternatively, *possibility* may co-occur with other lexical devices, the semantics of which conveys the meanings of indirectness and tentativeness, as is the case with the verb *suggest* in example (187) below. The multiple hedges of this type further decrease a writer's tentative stance towards the propositional content:

187. *This suggests the possibility that members of low-status groups who reject SJBs chronically expect to be a target of negative stereotypes more than those who endorse SJBs and that these stereotype expectations may account for effects attributed to SJBs.* (JPSP10)

As for the noun *likelihood*, the findings show its considerably lower frequency in Engcor as compared to *possibility*. Its low frequency seems to be in line with previous research which does not list it as a particularly frequent head noun controlling complement clauses in academic writing (Biber et al., 1999).[116] As can be seen in Table 5, the noun *likelihood* was mostly used in the Results section (n/1000 = 0, 15), while in the remaining RA sections its use was far less frequent. In the Results section, it was particularly associated with the moves where writers comment on the specific research findings, as illustrated in example (188):

188. *There was an above-chance likelihood that mothers with unresolved states of mind were involved in disorganized relationships with their infants (79%), and correspondingly, mothers who were not classified as unresolved were likely to be involved in organized attachment relationships with their infants (53%)…* (DP5)

[116] For example, Jiang and Hyland (2015) found that out of 8 scientific disciplines studied, *likelihood* was ranked among the 10 most frequent head nouns only in the corpus of research articles in Marketing.

As the findings show, not a single occurrence of the noun *probability* controlling *that*-clauses was recorded in the corpus. In that respect, the present findings support previous research, in which the noun is not listed among the most prototypical head nouns controlling complement clauses in academic writing (Biber et al., 1999; Jiang & Hyland, 2015).

6.2 Epistemic nouns in Crocor

The discussion on the epistemic nouns in the Croatian corpus follows the theoretical account discussed for the English nouns and is only referred to but not reiterated here. Furthermore, the analysis of the Crocor findings is done by analogy with English. In syntactic terms, this relates to the examination of the nouns controlling *da*-complement clauses (Pranjković, 2001). Though this type of clauses in Croatian can be introduced by other conjunctions as well (i.e. by the conjunction *kako*), *da* is considered to be the typical conjunction conveying hypothetical meanings in complement clauses controlled by verbs, adverbials or nominal expressions of modal or evaluative semantics (Pranjković, 2001). This was supported by the present corpus findings which showed only one occurrence of the selected set of head nouns taking the *kako*- complement clause.

The choice of the nouns followed Schmid's (2000) taxonomy of epistemic modal nouns[117] adopted for the analysis of the Engcor data. As with the Engcor nouns, the final list of the Croatian epistemic nouns is extremely limited in number and includes the following two nouns: *mogućnost* (Engl. *possibility*) and *vjerojatnost* (Engl. *likelihood*). The overall raw and normalized frequencies of the epistemic nouns examined in Crocor can be found in Table B4 (Appendix 12).

[117] The nouns included in the present corpus may be included in the category of abstract nouns (Cro. nestvarne, mislene, apstraktne) that denote something abstract, such as feelings, traits, states, physical and mental abilities, natural phenomena, etc. (Barić et al., 2005).

Congruent to the Engcor findings, the frequency analysis shows that the use of the epistemic nouns in the complementation pattern examined here is centered on one single noun, viz. *mogućnost*, which showed 0, 13 occurrences per 1000 words, whereas *vjerojatnost* was used rarely, amounting to only 0, 02 occurrences in the overall corpus (Table 6). The section which follows focuses primarily on the use of the noun *mogućnost* followed by a *da*-complement clause.

6.2.1 Overall findings of the epistemic nouns in Crocor. As can be seen in Table 6, the Crocor results show that the epistemic noun *mogućnost* was most frequently used in the Discussion (n/1000 = 0, 26), followed by the Results (n/1000 = 0, 10), and the Introduction (n/1000 = 0, 08), while no occurrences were found in the Method section.

Table 6

Normalized frequencies of the epistemic nouns across IMRAD in Crocor

	INTRODUCTION n/1000	**METHOD** n/1000	**RESULTS** n/1000	**DISCUSSION** n/1000	**TOTAL per item** n/1000
Mogućnost	0,08	0,00	0,10	0,26	**0,13**
Vjerojatnost	0,00	0,00	0,03	0,06	**0,02**
Total per section	**0,08**	**0,00**	**0,13**	**0,33**	**0,16**

As can be expected, the use of the given noun is mostly found in the moves where writers engage in speculations about the possible factors contributing to the nature of the obtained findings, as in:

> 189. *Moguće je i prikupljanje podataka tijekom nastave utjecalo na rezultate jer postoji mogućnost da je sama prisutnost vršnjaka, ali i njihovo neverbalno ponašanje, utjecalo na odgovore.* (PT9)

In addition to the evaluations which can be clearly attributed to the writer, the given pattern may convey intersubjective evaluations, whereby the source of the judgment is generalized, as in:

> 190. *Tako uzimanje inzulina postaje s vremenom rutina, a mogućnost da bi moglo doći do komplikacija svakodnevica.* (DI7)

The corpus data show that the given pattern seems to be a convenient means of marking different degrees of commitment to the content of the complement clause. This may be signaled by the choice of the lexical verb co-occurring with the given noun, which can be illustrated in the following sentences:

> 191. *Pri tome ne možemo zaključivati o uzročno-posljedičnim vezama jer postoji mogućnost da ispitna anksioznost uzrokuje slabiju prolaznost i niže ocjene, kao i mogućnost da slabija prolaznost odnosno učestali padovi na ispitima i loš uspjeh na studiju uzrokuju pojavu ispitne anksioznosti kod studenata.* (PT3)

The presence of the existence verb *postojati*[118] in example (191) suggests a strong identification of the noun with the content of the complement clause (Schmid, 2000). In a rhetorical sense, this implies that a writer conveys a considerable degree of conviction about the possibility of the given state of affairs.

[118] According to Silić and Pranjković (2005, p. 317), existence verbs (Cro. egzistencijalni glagoli) are the verbs that denote existence.

However, writers may use the given head noun to evaluate the propositional content as a possibility but hedge their commitment to it by using an additional hedging device, such as the lexical verbs *sugerirati* and *upućivati*. The corpus findings point to the relatively frequent instances of the compound hedges, i.e. co-occurrences of the noun *mogućnost* with the given verbs. As can be seen in example (192) below, the immanent tentativeness entailed by the verb *sugerirati* seems to reinforce the non-assertiveness of the whole evaluation, signaling thus a writer's distance from the content expressed in the complement clause.

192. *Iako globalnost uzroka negativnih događaja nije predviđala simptome depresije beznadnosti, više razine simptoma kod starijih sudionika sugeriraju mogućnost da bi odnosi atribucija i depresivnosti bili drukčiji kod nešto starijih adolescenata.* (PT6)

While the noun *mogućnost* seems to offer versatile possibilities with respect to marking the sources or strength of epistemic evaluations, the use of the epistemic noun *vjerojatnost* in the pattern examined here is significantly less central in Crocor. The following example may illustrate one of the rare epistemic uses of the given noun in *da*-complementation in Crocor.

193. *Prilikom interpretacije gornje granice heritabilnosti za dimenzije Ugodnosti i Savjesnosti na temelju korelacija otac-dijete i majka-dijete treba uzeti u obzir da za te dimenzije ličnosti postoji značajna korelacija među roditeljima, tj. da postoji vjerojatnost da je procjena izračunata na ovaj način precijenjena.* (SP10)

Congruent to the previously discussed noun *mogućnost*, the choice of the epistemic noun *vjerojatnost* co-occurring with the existence verb asserts the claim with a rather high degree of certainty. However, the low frequency of the given noun in the pattern examined seems to lend further support to the centrality of expressing stance in terms of possibilities rather than likelihood in the disciplinary writing examined here.

6.3 Comparison of the Engcor and Crocor findings

The overall frequencies of the use of epistemic nouns across the two corpora are presented in Figure 9.

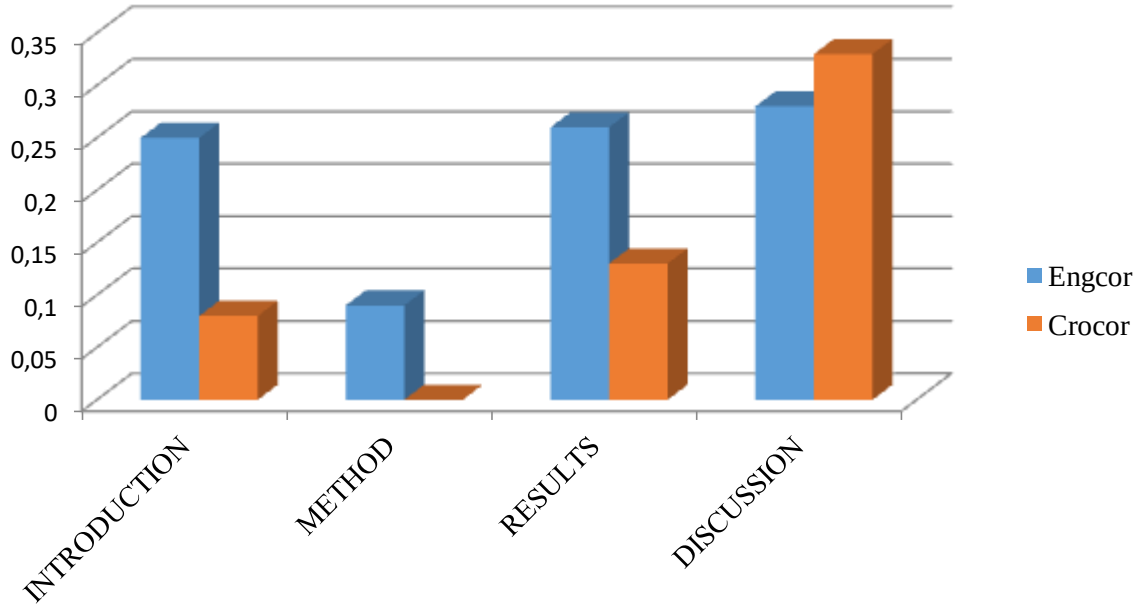

Figure 9. Distribution of the epistemic nouns across IMRAD in Engcor and Crocor

The results show that the epistemic nouns in the pattern examined here are generally more frequently used in Engcor rather than Crocor. As can be seen, compared to the Croatian writers, the English writers use the given epistemic nouns more frequently in the first three sections. However, with respect to the Discussion section, a slightly higher frequency of epistemic nouns is recorded in the Croatian corpus.

Overall, with the exception of the Method section, the Engcor findings show a rather even distribution of the given pattern in the remaining RA sections, which suggests that English writers use epistemic nouns to comment on and express stance throughout most parts of a RA. By contrast, the Crocor findings point to a greater fluctuation in the frequencies of the given nouns throughout the IMRAD structure. Given the overall

rhetorical functions of the Discussion section, a considerably higher frequency of the occurrences recorded here as compared to other sections suggest that Crocor writers mostly employ the given pattern of the epistemic nouns in assessing possibilities concerning the interpretations of the research findings.

When it comes to the use of the individual nouns, the results point to the saliency of only one noun in both English and Croatian corpus, viz. *possibility* and *mogućnost*. If we compare their frequencies, we can see that they were used quite similarly in the respective sub-corpora, whereby *possibility* showed 0, 15 and *mogućnost* 0, 13 occcurrences per 1000 words. While the frequencies of the given nouns showed a relative similarity in the Discussion sections, a greater discrepancy in the frequencies of the epistemic nouns was recorded in the Method and Introduction sections, which might point to a more interpretative nature of the two RA sections in English disciplinary writing as compared to Croatian. However, this assumption needs to be verified against the overall results outlined in the General discussion.

In sum, as regards the use of the epistemic head nouns in Engcor and Crocor, the findings indicate that they are more frequently used to convey meanings of epistemic possibility rather than probability. The fact that the writers favor the use of *possibility* i.e. *mogućnost* might be related to the notion that the given nouns mark a neutral conceptual shell for possible facts (Schmid, 2000), which makes them suitable for expressing stance towards a range of propositions. On the other hand, their lower position on the epistemic scale is clearly more associated with the pragmatic function of hedging in academic writing. Rhetorically, it might be more a central characteristic of the academic style than an indication of a higher level of certainty and consequently writer's commitment towards the propositional content, as implied by the markers indicating epistemic probability in both languages.

7. Hedging functions of the epistemic modality markers in Engcor and Crocor

The aim of the following section is to summarize the pragmatic functions of the core epistemic devices discussed so far. As outlined in the theoretical part of the present study, the corpus analysis broadly draws on Hyland's polypragmatic model of hedges (1998), as one of the most systematic taxonomy of the pragmatics of hedging devices in research article writing. As previously outlined, the model recognizes two fundamental types of hedges, conent- and reader-oriented hedges, the latter being the focus of the discussion of the subsequent corpus data.

With respect to the content-oriented hedges, their use is twofold; on the one hand, writers may use the hedges to acknowledge the uncertain state of the knowledge the claims are based on, specifying thereby the extent of their accuracy (Hyland, 1998). At the same time, content-oriented hedges may be used as a means of concealing the personal commitment, protecting thus a writer from the possible rebuttal of the claims (Hyland, 1998). As discussed in the subsequent chapters of the current analysis, in their most prototypical use the latter concerns a range of different linguistic means indicating the absence of personal agentivity in writing, such as the use of the passive constructions (i.e. *it is believed...*), 'abstract rhetors' (e.g. *the model assumes...*), etc.

As acknowledged by Hyland's fuzzy-set model of hedges (1998), a clear-cut distinction between the accuracy- and the writer-oriented hedges may often be hard to establish due to the overlaps of the functions in real language use. In other words, writers may simultaneously use hedges to indicate a level of confidence they wish to attach to the claims but also to conceal their personal involvement and thus shield themselves from potential negative consequences the unmitigated claims may entail.

Nevertheless, it has been shown that the use of the specific lexical devices tends to be associated more with the former rather than the latter function (Hyland, 1996b; Hyland, 1998). Thus, in their prototypical use the core epistemic devices examined in the previous chapters are primarily linked with the accuracy-oriented hedges, in particular reliability hedges, which aim to convey a writer's evaluations of the accuracy and validity of the propositional content (Hyland, 1996b). By signaling that the claims should be regarded in possible, probable or likely terms, writers indicate the extent to which their claims may be regarded as accurate which in turn may increase their reliability and consequently make them less open to disapproval (Hyland, 1998; Vihla, 1999). As Lewin (2005, p. 170) reports, an "author is not trying to say *less* than s/he believes but is trying to say *only* what s/he believes." This can paradoxically increase the reliability of evaluative statements, as writers do not claim more than the state of the evidence allows them to do so (Vihla, 1999). Generalizations or definite conclusions can easily be refuted on the grounds that what is asserted can never be testified as absolutely accurate. In a pragmatic sense, it is the function of hedges to point to those limitations, bringing the content as close as possible to what can be objectively qualified as being true (Hyland, 1998).

The paragraphs that follow serve to illustrate a more contextualized use of hedges discussed in previous separate sections with respect to both English and Croatian epistemic devices. The paragraphs were extracted from the Discussion sections, in which, as the previous chapters have shown, the epistemic language use is most salient. To reiterate, the Discussion section is a RA segment in which new knowledge claims are made, so a prudent use of cautious language seems to be most at stake here (Yang et al., 2015).

As a way of illustration, the following extract from a Discussion section deals with a writers' interpretations of the research findings.

195. *"As predicted, extraversion significantly moderated the effect of communication type. Introverts tended to be more anxious following a FtF interaction than after a CMC; whereas extraverts tended to display relatively low levels of anxiety in both FtF interactions and CMC. Such a finding is consistent with previous research that has suggested shy and introverted individuals tend to utilize CMC to start online relationships more often than other individuals (Amichai-Hamburger & Ben-Artzi, 2000; McKenna, 1998; Ward & Tracey, 2004). It seems probable that the anonymity provided by CMC reduces the anxiety that an introvert normally experiences during a FtF interaction. Such a reduction of anxiety might encourage introverted individuals to explore CMC as a potential avenue for social interactions (Ward & Tracey, 2004). It is equally likely that introverts might generally be more anxious than extraverts..."* (PID9)

As can be seen, the passage opens up with the factual report of the obtained results, moving on to situating these against the previous research findings. As a writer starts speculating about more general implications related to the research outcomes, the claims begin to carry more weight and a passage becomes more saturated with the epistemic language. The choice of the adjective *probable* might suggest a writer's relatively moderate degree of certainty into the probability that anxiety, which an introvert normally feels during a regular interaction, may be reduced by anonymity arising from CMC interaction. Though the whole claim is made tentative by the presence of the epistemic-evidential verb *seem*, the probability adverb *probable* conveys a higher level of certainty than would be entailed by an adverb conveying the possibility meanings. In the next sentence, the modal *might* signals that a level of certainty is reduced as a writer is speculating about a more personal and therefore more delicate matter, concerning the subjects involved. The same procedure is reiterated in the next sentence, the difference being only in the choice of the adjective *likely*, which occupies a congruent position on the epistemic scale, suggesting thus the same level of confidence a writer is putting into the claim.

With respect to the Croatian corpus, the hedging functions of the epistemic modality markers employed by Croatian writers may be accounted for against the same reliability type of hedges. As has been shown in the preceding chapters, Croatian writers employ the congruent categories of the epistemic devices to hedge the accuracy of the statements. However, the comparison of the overall frequencies of the epistemic devices across the two sub-corpora as well as the extent to which the particular epistemic devices are salient in English as compared to Croatian disciplinary writing examined here is the focus of the General discussion of the overall CORACEN findings.

As can be seen in the extracted passage below, drawing on the obtained results, a writer offers a tentative interpretation of the possible implications of the research outcomes, which is signalled by the choice of the tentative discourse verb *sugerirati* and more generally by attributing the whole evaluation to the inanimate subject *rezultati*. A writer's hedged stance is further signaled by the presence of the epistemic adverb followed by the *da*-complement clause. As the claim gains on generalizability, a level of certainty a writer attaches to the claims decreases, which is evident in the choice of the conditional form of the modal *moći*.

> 196. *"Ovakvi rezultati sugeriraju da internalnost uzroka ima različito značenje za djevojke i mladiće. Moguće je da u mladića djeluje zaštitno jer pruža osjećaj kontrole nad događajima u životu, dok u djevojaka ima više nepovoljnoga utjecaja na samopouzdanje, što bi moglo biti jedan od čimbenika koji štite mladiće od depresivnosti. Naime, ako mladići, što su stariji, imaju internalnije atribucije negativnih događaja, one bi mogle pridonositi većem osjećaju kontrole i na taj način štititi od depresivnosti."* (PT6)

To sum up, what seems to lie at the heart of the epistemic markers used as hedges examined here is that they entail a sense of openness (Mauranen, 1997). In other words, by using the

indicated modal devices, writers signal that based on the theoretical background, nature of the sample size, methodological procedures used in research, etc. their interpretations, assumptions, viewpoints, etc., represent one of the possible ways of looking at the phenomenon under study, which does not preclude alternative possibilities (Mauranen, 1997). Therefore, the use of reliability hedges discussed here is primarily concerned with the propositional content of the statements and a writer's desire to specify that the claims are to be understood as speculations rather than the assertions of the categorical truth (Hyland, 1998).

8. Epistemic verbs

8.1 Epistemic verbs in Engcor

The epistemic verbs[119] denoting mental processes, such as *believe, assume, think,* etc. have been a well-established category of hedging devices in academic writing, generally used to mitigate assertiveness or the writers' commitment to the proposition (Hyland, 1996a). Overall, their use in academic writing concerns the indication that a degree of commitment to the propositional content is based on the uncertainty of the human evaluation (Hyland, 1998). Compared to the epistemic modal devices discussed thus far, the epistemic verbs are distinguished by the fact that they mark the subjectivity of epistemic qualifications explicitly (Hyland, 1998), making thus a writer's presence in the text most visible, as shown in:

> 197. *Based on findings by Nock and Prinstein (2005) and Klonsky and Olino (2008), we believe the tendency to self-injure alone (henceforth AL-NSSI) may be an easily measurable and theoretically meaningful marker for suicide risk among those who self-injure.* (PID5)

In addition, a writer's subjective epistemic evaluation can be conveyed by an impersonal form of an epistemic verb, which may, among others, signal a writer's avoidance of taking a personal responsibility for a claim offered (Hyland, 1998), as shown in:

> 198. *Consistent with a diathesis-stress perspective … it is hypothesized that anxious solitary children who experience heightened peer stress (i.e., peer exclusion) in the course of their daily lives are most likely to respond to a social challenge in a helpless manner.* (DP3)

Furthermore, epistemic verbs may signal intersubjective epistemic evaluations, shared generally by disciplinary members. Example (199) may serve to illustrate the point:

[119] The term *epistemic verb* is adopted here in order to retain the same label with respect to the categories of the epistemic devices examined in the present study.

199. *Under this model, each of the variance components is assumed to be constant throughout the population and to be independent of the others.* (DP4)

As the subsequent analysis will show, versatile possibilities for coding epistemic evaluations make the epistemic verbs a convenient means for expressing a range of different rhetorical functions in academic discourse (Hyland, 1998; Vartalla, 2001, etc.). In line with the procedure established in the previous sections, the section that follows outlines the general linguistic properties of the verbs in question. This is followed by the account of the given verbs in research article writing and the outline of the approach adopted in the present study.

The verbs such as *think, speculate, believe, anticipate,* etc. as indicated in the examples above can be found under different labels in English grammars. In Fraser's (1975) taxonomy of the illocutionary acts the verbs of this type are used to perform the Acts of Evaluating which refer to the speaker's assessments of the truth of proposition. Perkins (1983) suggests the label 'modal lexical verbs', arguing that the verbs such as *assume, believe, guess, presume, suppose, think, understand*, etc. represent one of the means of expressing epistemic modality and are semantically and syntactically close to epistemic adverbs, as shown in:

a) *He's drunk again, I presume.*

b) *He's drunk again, presumably.*

Cappelli (2007, p. 149) uses the term *verbs of cognitive attitude,* which are used "when the subject is not certain that something is the case but has a 'hypothesis' about the likelihood of a state of affairs", while Biber et al. (1999) discuss mental verbs which may denote a range of cognitive and emotional meanings. Thus, cognitive meanings may refer to dynamic mental activities *(*e.g. *calculate, decide, learn, read)* or more stative ones which denote

either mental states *(*e.g. *believe, know, doubt, know, understand)* or emotional or attitudinal states *(e.g. prefer, enjoy, like, love).*

A comprehensive account of the cognitive verbs is provided by Nuyts (2001) within his cognitive-pragmatic framework of epistemic modality. The author uses the term 'mental state predicates' or 'propositional attitude predicates' and primarily discusses the verbs *think, believe, doubt, know, suppose,* and *guess* (and their Dutch and German counterparts), *think* being the prototypical verb of this category. The status of *think* as the central mental verb has been confirmed by the LSWE Corpus findings (Biber et al., 1999). More specifically, *think* is one of the five most frequently used mental verbs in four registers studied and one of the twelve most frequent lexical verbs in the corpus as a whole.

Nuyts (2001) suggests that unlike epistemic adverbs and adjectives, mental state predicates constitute a more open word class. In addition, while other modal devices such as, for instance, epistemic adjectives and adverbs take rather fixed positions on the epistemic scale in terms of the notions of possibility, probability or certainty, for most mental state verbs the position on the epistemic scale is difficult to specify. For example, even though *know* is definitely more certain than *believe* or *guess*, the difference in the epistemic strength between the latter two is rather non-specific and may simply signal that the strength of an epistemic qualification is somewhere towards the positive end of the epistemic scale. If the verbs do convey different shades of meaning, then this difference may be related to the status of the evidence which the epistemic qualification is based on, which in turn implies the presence of not only the epistemic but also the evidential dimension in the meaning construal of the given verbs (Nuyts, 2001). Thus, the meaning of *know* in an example sentence:

c) *I know that she couldn't do something like that.*

could be paraphrased as something like: 'Though I have no solid proof, I am pretty much convinced/I am certain that she hasn't done it because I have known her all my life.' By contrast, the meaning of *guess* could be paraphrased as: 'I consider it probable that she hasn't done it, though I have no solid proof for it.'

According to Nuyts, one of the main characteristics of the mental state predicates is the fact that they can exhibit both qualificational and non-qualificational meanings, the former being the focus of the present analysis. The author goes on to suggest that the former meanings involve an epistemic evaluation of the state of affairs, while the latter concern a mental state or a mental process. The distinction between the two meanings of the mental state predicates is reflected in their syntactic properties (Nuyts, 2001). For example, in its non-qualificational meaning, the English verb *think* is used intransitively, as in:

d) *Shut up, I am thinking.*[120]

On the other hand, a qualificational meaning construal of *think*, as well as the other mental state predicates, is linked with the complement *that*- structure (e) or a parenthetical use (f), as illustrated in the following examples:

e) *I think/believe (that) they have run out of fuel.*

f) *It is dangerous, I think/believe, to run out of fuel in a desert.*

Nuyts argues that the non-qualificational meanings of the mental state predicates are the literal, i.e. original meanings of the given verbs. The qualificational meanings, in turn, could have developed out of the non-qualificational because the latter involve the openness of the reality status of the state of affairs. Thus, according to the author, believing something does

[120] The examples (d, e, f) were taken from Nuyts (2001, pp.116-117).

not involve experiencing the factuality of it. Due to this inherent factual openness, mental state predicates can be exploited to signal a speaker's uncertainty with respect to the state of affairs.

In regard to academic writing, verbs denoting cognitive activities have been explored within different taxonomies of the lexical verbs performing hedging functions. Without going into a detailed account of the full scale taxonomies, the present section addresses only the verbs in the focus of the present analysis. Thus, in Hyland's (1998) taxonomy of the lexical verbs functioning as scientific hedges, the verbs under study are classified in the group of 'Epistemic judgment verbs', denoting either writers' speculative judgments (e.g. *believe, speculate, suspect, assume*) or deductions (e.g. *conclude, calculate*). According to the author, the former indicate that the writer is conveying a tentative rather than an assertive stance towards the propositional content, as illustrated in the following example:

> 200. *Because the function of worldviews is to provide a sense of stability, predictability, and certainty in one's own life (Lerner & Miller, 1978), we assume that people are concerned about maintaining and defending worldviews that involve social systems relevant to the self.* (JPSP10)

In Vartalla's (2001) typology of lexical verbs used to perform hedging functions in academic writing, 'Tentative cognition verbs' refer to a broad category of verbs denoting mental states and activities, comprising 35 different verbs (e.g. *assume, think, estimate, speculate*). According to the author, the hedging status of the given verbs is related to the fact that they signal that the information is based on a writer's subjective cognitive processes rather than solid empirical evidence. That is, the use of a tentative cognition verb marks that the information may be correct only in terms of speculations or estimations rather than objectively measured categorical truths.

Along similar lines, for Šinkūnienė (2011) mental verbs (e.g. *assume, think, believe, consider*) are mainly used to signal that a claim is explicitly a writer's opinion, as in example (197) or that it is shared by unspecified members of a disciplinary community in general, as indicated in example (198).

As can be seen in the above-cited examples, the subjective uses of the given verbs are most explicitly signaled by the presence of the first person personal pronouns, while the intersubjective uses are usually conveyed by means of the passive constructions. Indeed, as demonstrated in the subsequent analysis of the present data, the two sources of epistemic judgments are the most common when it comes to the use of the epistemic verbs examined here. As discussed further below, previous research has shown that both subjective and intersubjective uses of epistemic verbs have their well-established statuses as hedges in academic writing (Hyland, 1996a, 1996b; Hyland, 1998; Vartalla, 2001; Šinkūnienė, 2011).

However, what seems to be a matter of scholars' disagreement is the hedging status of epistemic verbs (but other lexical verbs with the hedging potential as well, e.g. *suggest*) when used to report other scholars' epistemic evaluations, as shown in:

> 201. *That is, Lyons-Ruth et al. (1999) hypothesized that disorganization arises from an interactional environment that is so disrupted that organized infant attachment strategies are inadequate*. (DP5)

The major issue concerning the use of such epistemic evaluations is their source, since it may be assigned to either a writer or to an original author. In other words, in examples such as (201), we may assume that the writer is merely reporting another scholar's evaluation without taking any stance towards it. In Nuyts' (2001) terminology, this would be a case of a descriptive epistemic evaluation, whereby a writer provides no indication concerning his or her commitment to the reported epistemic qualification. If this were the case (which could be confirmed only by looking at the original source), then the uses such as (201) would not

be assigned the status of hedges, as suggested by previous research (Crompton, 1997; Šinkūnienė, 2011).

By contrast, an alternative interpretation, which is adopted in the present study, is that a writer is acknowledging previous work but at the same time taking a stance towards the reported information (Hyland, 1998; Hyland, 2004; Vold, 2006b). The choice of the reporting verb in other words is not random, but a writer's conscious decision to indicate his or her evaluation of a particular proposition, which is in case of the cognitive verbs in question, of a rather tentative nature (Hyland, 2004; Vold, 2006b; Charles, 2007). Thus, by choosing the verb *hypothesize* rather than, e.g. *assert* in example (201), the writer is signaling the speculative nature of the reported claim, indicating at the same time his or her degree of commitment towards it (Vold, 2006b; Charles, 2007). Asked about the citation practices in writing research articles in psychology, one of my informants remarked the following:

> "I express my stance towards other scholars' work in a very much similar way I mark it toward different aspects of my own research. If I felt more confident in the meaning of the data the other scholars reported on, I would use verbs such as *show* or *demonstrate*. If I wanted to mark a bit more of a distance from the cited work, I would write i.e. *X proposed* or *suggested*. Or if I wanted to mark that I am aware of this being one of several possible views on the topic, I would say *according to (a particular model/theory/author)*. Generally, when I mark my stance, I prefer to do it in subtler ways, always with a sense of respect for other scholars' endeavors." (Interviewee 1)

8.1.1 Selection and classification of the epistemic verbs in Engcor. As noted earlier, compared to the other epistemic modality markers, epistemic verbs are specific as they most transparently bring to light the multivoiced nature of academic writing (Fløttum et al., 2006). As the previous examples retrieved from Engcor have shown, a writer may use an epistemic verb to convey his or her epistemic evaluations either explicitly (197) or implicitly (198), to report on another scholar's epistemic evaluation (201), or to make reference to generally held disciplinary evaluations with no clear indication of the source of the epistemic judgment (199).

Against this background, the present study explores the cumulative use of epistemic verbs across the IMRAD structure. However, in order to investigate the extent to which writers use epistemic verbs to make their epistemic evaluations explicitly vs. implicitly visible, particular attention and a separate frequency count is provided for the use of the given verbs in conveying subjective epistemic evaluations and their rhetorical functions. This dimension is labeled here as Self-reference, and it comprises the frequency counts of the explicit forms of subjective uses of epistemic verbs (e.g. *We believe that…)* and their implicit forms (e.g. *It is believed that…*). The former use is labeled as Personal Self-reference and the latter Impersonal Self-reference.[121] In line with previous research (Molino, 2010), this decision is further motivated by an interest into exploring the cross-cultural preferences towards an explicit or implicit authorial presence when conveying epistemic stance in the disciplinary writing examined here. In addition, the analysis also provides the frequency counts of the use of epistemic verbs in evaluating other scholars' work. This dimension is labeled as Other-reference (e.g. X *assumed…/is assumed* [X]).

[121] The terms *Personal* vs. *Impersonal Self-reference* have been coined according to Molino's (2010) terms *Personal* vs. *Impersonal authorial reference*.

With respect to the selection of the epistemic verbs used in the present analysis, several taxonomies of the given verbs (Perkins, 1983; Biber et al., 1999; Nuyts, 2001; Cappelli, 2007), particularly those dealing with the research article writing (Hyland, 1998; Vartalla, 2001; Šinkūnienė, 2011), had been consulted and compared before the final list of the epistemic verbs was compiled. It should be noted that neither of the previous taxonomies was adopted in their entirety given the differences in the scope and approaches of the respective studies. For example, Vartalla's (2001) list of the tentative cognition verbs includes verbs such as *conclude* or *infer*, which are understood here as evidential markers, concerned with inferential reasoning (Hyland, 1998). In addition, the use of the verb *tend*, included in Šinkūnienė's (2011) list of the mental verbs performing hedging functions was not considered in the present analysis. Similarly to the non-epistemic uses of the comparative forms of the adverb *likely*, it may be assumed that the given verb is primarily used to describe someone's tendency or inclination towards certain behavior rather than to signal a writer's epistemic judgment. This may be nicely illustrated in the following examples extracted from Engcor:

> 202. *Young people who are emerging into adulthood and displaying behavioral symptoms such as stealing and setting fires tend to perform poorly within the academic environment, as evidenced by low grade point averages ... They are also more likely to drop out of high school (Frick et al., 1991) and less likely to attend college (Hinshaw, 1992a).* (DP4)

To sum up, the final list of the epistemic verbs included the following verbs: HYPOTHESIZE, PREDICT, BELIEVE, ASSUME, THINK, CONSIDER, ANTICIPATE, CONCEPTUALIZE, THEORIZE, BE REGARDED AS, BE VIEWED AS, SUSPECT, SPECULATE, HOPE, POSTULATE, CONCEIVE, DOUBT, IMAGINE, PRESUME, SUPPOSE.

Considering the structural patterns in which the given verbs occur, the present analysis draws on Biber's (2006) lexico-grammatical framework for the analysis of stance

markers in academic prose. In particular, the analysis explores the use of the epistemic verbs controlling a) the *that*-complement clause (e.g. *it is assumed that*) and b) the *to*-complement clause (e.g. (*X) is assumed to...*). The latter concerns the use of the epistemic verbs in the passive constructions, yielding the following pattern: be + epistemic verb-*ed* + *to*-clause (Biber et al., 1999). It should be noted that the frequency analysis also included few elliptical occurrences with the verb *consider*, in which the verb 'to be' was omitted, as in: *considered adaptive, considered indicative of*, etc. Likewise, the analysis included a few occurrences in which the complementaizer *that* was omitted (e.g. *We think* [*that*] *it…*)

8.1.2 Overall findings of the epistemic verbs in Engcor. At the outset, it should be noted that the analysis included only the verbs which occurred a min. of 5 times in the corpus as a whole.[122] In that way, the focus was placed on the use of the epistemic verbs for which the frequency analysis showed to be the most salient verbs in the disciplinary writing examined here. Given the selected criterion, the analysis included the following verbs: ANTICIPATE, ASSUME, BELIEVE, CONCEPTUALIZE, CONSIDER, HYPOTHESIZE, PREDICT, THEORIZE, and THINK. The overall raw and normalized frequencies of all epistemic verbs subjected to the frequency analysis can be found in Table A7, in Appendix 12. As outlined in the previous section, the analysis presents the results of the frequency analysis with respect to the two dimensions of the use of the epistemic verbs, viz. Self-reference and Other-reference.

As can be seen in Figure 10 below, with respect to the overall distribution of the epistemic verbs in Engcor, the findings show that they were prevalently used in the Introduction section (n/1000 = 1, 60). By comparison, the overall results point to their

[122] This criterion was used only with respect to the present category of the epistemic devices given their greater amount as compared to the others.

significantly lower frequency in the Discussion (n/1000 = 0, 78) and Results (n/1000 = 0, 42) sections, while in the Method the use of the given verbs was almost non-existent (n/1000 = 0, 09).

As demonstrated in Figure 10, in regard to the two dimensions observed, the overall findings show a higher frequency of the given verbs used in Self-reference (n/1000 = 0, 65) rather than Other-reference (n/1000 = 0, 10) (cf. Table A6, Appendix 12). In other words, the Engcor writers used the epistemic verbs far more frequently to convey subjective epistemic evaluations rather than to report on those of other scholars. Concerning the latter use, the findings are in line with Biber et al.'s (1999) observations pointing to a generally low tendency of mental verbs to occur in reporting structures in academic prose. The use of the epistemic verbs in each dimension is discussed in turn.

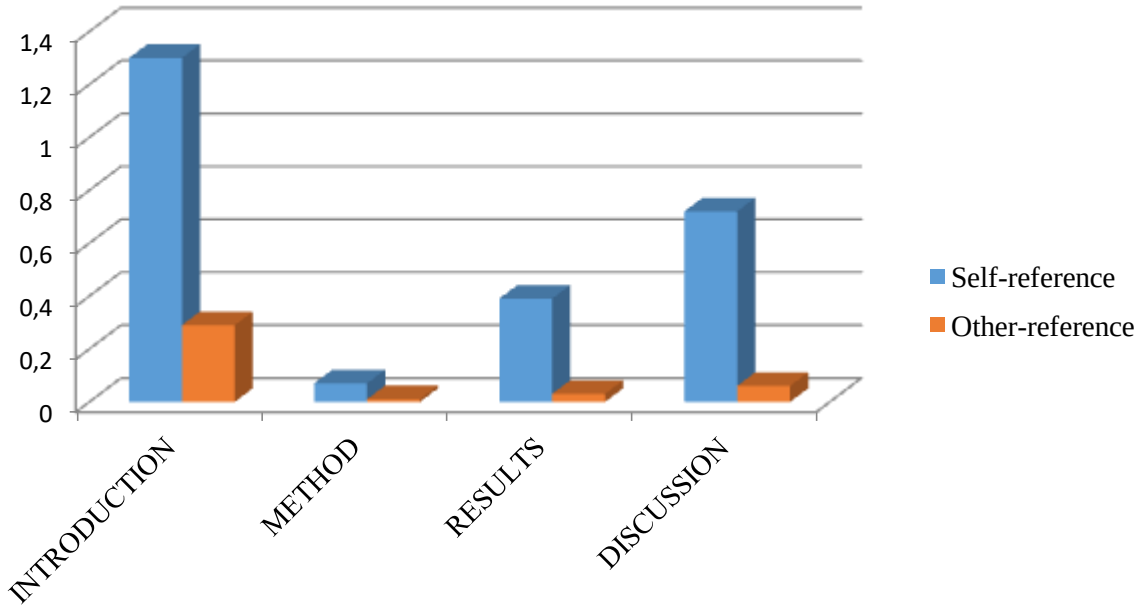

Figure 10. Distribution of the epistemic verbs in Self- and Other-reference across IMRAD in Engcor

8.1.3 Epistemic verbs in Self-reference. As previously mentioned, writers may use the given verbs to show their epistemic stance explicitly or implicitly. The former or Personal Self-reference refers to the co-occurrence of the epistemic verbs with the personal pronoun *we*. Given that the present corpus consists of the multi-authored articles, *we* implies here the exclusive use of the first person plural pronoun, referring to the authors of the given articles (Baumgarten, 2008). The Impersonal Self-reference, on the other hand, refers to all other occurrences of the epistemic verbs in which there is no indication of other cited authors.

As can be seen in Table 7, the overall findings point to the substantially more frequent use of the epistemic verbs in the Personal (n/1000 = 0, 49) rather than Impersonal Self-reference (n/1000 = 0, 15), suggesting that psychology writers in Engcor tended to commit themselves strongly with their epistemic judgments. Though the scope of the study is limited to a particular verbal group which prohibits broader generalizations, the corpus findings might point to the general tendency of scientific writing in psychology to favor personal (i.e. active voice) rather than impersonal verbal forms, as suggested by the guidelines provided by writing style manuals, such as Sternberg (2000), APA (2010), and Kail (2015).[123]

[123] These writing style manuals generally recommend the use of the active voice over the passive voice on the grounds that the passive voice makes the reading wordy and hard to follow.

Table 7

Overall distribution of the epistemic verbs in Personal and Impersonal Self-reference in Engcor

	Raw frequency	**Normalized frequency n/1000**
Personal Self-reference	117	0,49
Impersonal Self-reference	38	0,15

8.1.3.1 Personal Self-reference. Generally, the use of the personal pronouns in academic writing is the most explicit signal of the authorial presence in the text and a powerful rhetorical means writers use to intrude into their text, emphasize their positions and claim responsibility for their claims (Hyland, 2002). As the subsequent discussion will show, the epistemic verbs examined here are used to underscore the writers' epistemic stance and indicate a strong personal commitment to their hypotheses, predictions, assumptions, and epistemic beliefs generally.

When it comes to the distribution of the individual epistemic verbs used in Personal Self-reference, the Engcor findings point to the saliency of two epistemic verbs viz. *hypothesize* and *predict*. As can be seen in Table A6 (Appendix 12), the overall frequency of the two verbs was almost identical, showing a similar pattern of distribution across the IMRAD structure, with *hypothesize* (n/1000 = 0, 18) being slightly more frequently used than *predict* (n/1000 = 0, 17). Thus, the highest frequency of occurrences of both verbs was recorded in the Introduction, while no occurrences were recorded in the Method section. The Results and Discussion sections showed relatively moderate use of the given verbs, with *predict* being used more in the Results section (n/1000 = 0, 17) as compared to *hypothesize*

(n/1000 = 0, 06), while the use of *hypothesize* showed a relatively higher frequency of occurrences in the Discussion section (n/1000 = 0, 16) than *predict* (n/1000 = 0, 08).

The highest density of the given verbs in a single RA section, i.e. the Introduction indicates that they are used to perform a specific discourse function, which may be defined as "as the function that a sentence containing a personal pronoun performs in the immediate discourse context of a journal article" (Kuo, 1999, p. 130). In case of the two verbs, the most salient function is clearly related to stating research hypotheses and predictions, as shown in examples (203, 204), respectively:

> 203. *Thus, we hypothesize that upper-class individuals should be more likely to choose utilitarian options that maximize the greatest good for the greatest number in high-conflict moral dilemmas that pit moral intuitions against consequentialist calculations, relative to lower-class individuals.* (JPSP2)

> 204. *In the current study, we predict that the degree to which one parent's childrearing practices can be predicted by the spouse's parenting will be greater in families characterized by low amounts of marital negativity and therefore lower in families with high amounts of marital negativity.* (DP9)

Preference for the explicit personal forms of the given epistemic verbs reflects writers' desire to precisely and unambiguously align themselves with the hypotheses aimed to account for a particular research problem (Milas, 2005). Indeed, precision and unambiguity is one of the basic principles in setting up the hypotheses in a research design and the choice of the explicit personal lexical form can be considered to be its most overt manifestation.

As the findings show (Table A6, Appendix 12), with respect to the remaining two RA sections, the frequency of the given verbs was less salient. Thus, in the Discussion section writers mainly use them to reiterate the research hypotheses and predictions and relate them to the obtained findings, as shown in the following examples:

205. *First, we had predicted that moral disgust, whose nonsocial counterpart is typically associated with withdrawal, would be most strongly associated with avoidance, but instead we found that only anger predicted this behavior.* (JPSP4)

206. *We hypothesized that two dimensions relevant to the other-judgmental emotions of moral disgust and contempt might be morality and competence, respectively. Results were consistent with this hypothesis.* (JPSP4)

The frequencies of other epistemic verbs (i.e. *believe, assume, anticipate, theorize, think*) in Personal Self-reference were much less salient, as compared to *hypothesize* and *predict*. Though the given verbs were mainly used in the Introduction (n/1000 = 0, 16) and Discussion sections (n/1000 = 0, 23), and almost non-existent in the remaining middle RA sections, the findings show the preference for particular verbs to occur in one particular section rather than another, which clearly points to the different discourse functions that they perform. Thus, the use of *anticipate* is tied exclusively to the Introduction section, in which it is used to announce a writer's assumptions which are about to be tested in the unfolding research, as in:

207. *We anticipate that individuals who feel and display intense embarrassment should indeed behave in more prosocial and trustworthy ways (cue validity).* (JPSP3)

By contrast, *assume* and especially *believe* are mainly used in the Discussion section and their use seems to be concerned with the moves in which writers elaborate on their arguments, foregrounding unambiguously their personal judgments (Hyland, 2002; Molino, 2010), as in:

208. *Because the function of worldviews is to provide a sense of stability, predictability, and certainty in one's own life (Lerner & Miller, 1978), we assume that people are concerned about maintaining and defending worldviews that involve social systems relevant to the self.* (JPSP10)

209. *We believe that these differences led to different levels of self-image threat and uncertainty across conditions.* (JPSP8)

210. *Although the overall pattern of results matched our predictions, we believe that the relatively weak simple effects observed in this study may have been due to the impoverished nature of the interaction.* (JPSP10)

In all of the above examples writers are expressing their epistemic evaluations, indicating that the state of affairs is possibly true (Cappelli, 2007). As can be seen, the strength of the epistemic evaluation indicated by the given verbs may vary depending on the contextual clues. Thus, compared to example (209), in (210) a writer is probably indicating a lower degree of commitment to the claim, as suggested by the presence of the modal *may*. In a pragmatic sense, *believe* is used here to mark a writer's caution with respect to the research outcomes, which might be regarded as the characteristic discourse function of the epistemic verbs typically found in the Discussion sections of RAs (Kuo, 1999).

The explicit forms of stance-taking illustrated in the above examples suggest that writers, for whatever reason, find it important to make their stance unambiguously clear and precise. Motivation for such overt manifestations of the authorial voice may vary. Psychology writers are generally advised to remain in the background and surface only when they find it necessary to draw the readers' attention to personal speculations (Bem, 2000). Hyland (2001) argues that the writers' explicit visibility by means of personal pronouns might be driven by a desire to present their authorial selves with confidence, which, in turn, may contribute to gaining credit for their claims. This might be especially visible in the moves concerned with the outline of the research strengths. In a rhetorical sense, the use of the epistemic verbs may be regarded as writers' attempts to promote the significance of their research, as illustrated in the following examples:

211. *We encourage others to expand this research by concentrating on other well-known personality scales and their origins. Indeed, as with archaeology proper, we think that our study was validated by the fact that we did have some substantial finds.* (PID3)

212. *We believe that the current investigation has important theoretical implications.* (JPSP8)

Kuo (1999) claims that the writers' presence of this type occurs in strategic places in articles where writers want to make their role as researchers prominent and thus emphasize their personal contribution to the disciplinary knowledge.

It is worth noting that writers may employ the same verb to convey different discourse functions. For instance, the use of the verb *believe* in sentence (212) asserts a writer's personal belief, indicating his or her strong commitment to the proposed claim. This contrasts with the use of *believe* in sentences (209) and (210), in which the writer is conveying an epistemic evaluation, qualifying the propositional content as more or less likely. The above examples point to the distinctive meaning construals of the verb *believe*, which has been discussed at length by Cappelli (2007). As indicated in (209) and (210), *believe* may be used to indicate a possibility that a given state of affairs is true. At the same time, it may function as a marker of a committed personal opinion only (212). Though a more detailed discussion on these issues extends the scope of the present work, for the present purposes, it suffices to note that the distinctive meaning construals of the given verb may be accounted for in terms of the interplay between two attitudinal categories, evidentiality and epistemicity, which are both present in the meaning construals of the verb *believe* (Cappelli, 2007). According to the author, in case of a stronger commitment as in (212), it seems that writers base their epistemic qualification on some sort of affective evidence which may be related to the personal judgments concerning their own research. On the other hand, when evidence, or rather a writer's evaluation of it is weaker, the verb

construes the epistemic meaning, indicating a lesser degree of commitment on the part of the writer (210). As the present corpus findings suggest, both meaning construals are employed by writers in Engcor, serving distinctive rhetorical purposes.

Finally, it is important to draw attention to the hedging account of the use of lexical verbs in Personal Self-reference. In earlier accounts of scientific hedging, the co-occurrences of the personal pronouns and the epistemic verbs were interpreted as reader-oriented hedges, primarily concerned with writer-reader interaction (Hyland, 1998). According to Hyland (1996b) and Hyland (1998), the main role of the explicitly marked personal statements in academic writing is to signal to the readers that a claim is strictly personal. In other words, by indicating that the claims rest upon their subjective interpretation, writers make it clear that they are aware that alternative interpretations may be equally plausible. As Hyland (1996b) observes, the explicit signals of the personal attribution leave the claims open to readers' judgments. In that way a dialogical space is opened up and readers are implicitly invited to participate.

In his account of hedges within the realm of politeness theory, Myers (1989) argues that assuming a personal responsibility for a claim weakens the force of the statement, reducing thus its generalizability. This view is best illustrated in the following quote: "…we must recall that scientific knowledge is supposed to be taken as universal; therefore any implication that a belief is personal weakens it" (Myers, 1989, p. 14). Under this and similar accounts, any traces of subjectivity or personal involvement are viewed as undermining the validity of scientific knowledge. Such a view supports the traditional positivistic perspectives on science according to which impersonality, objectivity and factuality of scientific language reflect the objectivity of scientific knowledge (Sanderson, 2008).

However, the rigid views on personal involvement in academic texts have been recently reinterpreted in a sense that personal attributions are viewed as a means of

conveying personal opinions and projecting the writer's identity in its own right (Hyland, 2005a, 2005b). Self-mention is therefore seen as one of the means how writers, especially in the soft sciences, step into their texts and "stamp their personal authority onto their arguments" (Hyland, 2005b, p. 176). As Baumgarten (2008) observes, the "first person pronouns in academic discourse serve to personalize claims and beliefs, to stress the originality and the ownership of the work and the ideas presented, to align the reader with the writers' perspective" (p. 412).

In that sense, the present study adopts the view that the use of personal pronouns co-occurring with epistemic verbs is considered to be the writers' strategic choice to clearly and strongly align themselves with their research perspectives and thus exhibit a credible academic authority (Hyland, 2001). In other words, personal intrusion into the text assists writers to explicitly foreground their personal standings, distinguishing themselves and their work from those of others (Hyland, 2001). As Hyland notes, the explicit presence in a text helps writers assert their personal opinions and is therefore seen as an important rhetorical device in academic writing.

The hedging status of epistemic verbs in Personal Self-reference (but in other dimensions as well) may be interpreted against their core semantics, which subsumes a shared notion of uncertainty. In a pragmatic sense, the given verbs are employed to indicate the writers' assumptions, speculations or predictions of something that has not been confirmed but provides the basis to be possibly accurate (Milas, 2005). In broad strokes, their overarching hedging functions are tied to that of other epistemic devices in terms of signaling speculative rather than categorical claims. However, what makes the use of the epistemic verbs specific is the fact that the writer's presence and his or her epistemic judgments are made more visible and therefore more salient in the text. This allows writers to underpin the relevance of the personal judgments where deemed as appropriate. Though

the epistemic verbs are more frequently employed in Personal rather than Impersonal Self-reference in Engcor, the corpus findings show that the latter do play a role in conveying the writers' epistemic stance. The section which follows examines their use and discourse functions in more detail.

8.1.3.2 Impersonal Self-reference. As can be seen in Table A6 (Appendix 12), the use of the epistemic verbs in Impersonal Self-reference showed the highest frequency of occurrences in the Introduction (n/1000 = 0, 21) and Discussion sections (n/1000 = 0, 21). In addition, while the use of the given verbs in Personal Self-reference is centered around two main verbs, the Engcor findings do not point to the salience of any particular epistemic verb used in impersonal structures.

With respect to the structural patterns, in marking the implicit authorial voice the given verbs most frequently occur in *it*-clauses[124] (Hewings & Hewings, 2002). These may take different forms, such as the passive voice of an epistemic verb (213) or adjectival predicate + extraposed *that*- clause (214), as shown below:

> 213. *With regard to item nonresponse, it was assumed that values were missing at random, that is, we assumed that the outcome variables were not related to these variables themselves but may have been caused by other variables (e.g., sex, household income, and maternal education)* ...(DP10)

> 214. *If true, it is logical to assume that improvements in learning environments and teaching techniques would enhance performance in the stereotyped domain.* (JPSP7)

Hewings and Hewings (2002) argue that the impersonal *it*-clauses perform different interpersonal functions in academic writing, which primarily refer to commenting on, evaluating or hedging the content of the following *that*-clause, while allowing a writer to remain distant from it. According to the authors, though the given structures convey a

[124] According to the authors, *it*-clauses consist of an anticipatory *it* and the extraposed subject.

personal opinion, their primary function is to convey the air of impersonality and formality of scientific writing.

Hyland (1998) treats impersonal constructions, such as (213) and (214) as writer-oriented hedges whose primary role is to diminish a writer's presence in the text and consequently the commitment to the propositions.[125] As such, they are recognized as the prototypical hedges in scientific writing, primarily characterized by the writers' invisibility (Hyland, 1998). By avoidance of the explicit attribution for the claims, responsibility for the latter is seemingly removed from a writer to an unknown source, which may refer to any member of a disciplinary community.

For example, in sentence (214) by relying on the logical basis of the assumption, writers create an impression that the latter is not solely their judgment and that the other scholars, following the same logical principles, would assume the same. In other words, by means of the given impersonal construction, an essentially subjective judgment[126] is coded as a seemingly intersubjective one, which might be regarded as a protection from a potential misjudgment on the part of a writer. Just as the writers may have reasons to align themselves strongly with certain claims, they may equally so avoid an explicitly strong personal evaluation, resorting thus to various linguistic means of concealing the Self as the source of the judgment. Writers might feel reluctant to align themselves more strongly with their judgments which may be driven by different reasons related to the awareness of all possible limitations of the study. In that sense, the "attributional vagueness ... constitutes a viable communicative option which functions to protect the writer from the possible consequences of negatability" (Hyland, 1998, p. 176).

[125] In Hyland's polypragmatic model (1998), writer-oriented hedges include the use of the passive constructions, inanimate subjects assuming agentive roles (e.g. *research suggests*), epistemic-evidential verbs (e.g. *it seems that*) and other means by which writers avoid assuming explicit responsibility for the claims.

[126] Though in some cases, it was not straightforward to determine whether the sources of the epistemic evaluation were attributed solely to the writers of the given paper and not implicitly to other scholars as well, the contextual clues generally signaled one or the other.

Though rarely employed in Engcor, phrasal expressions with existential *there* might be regarded as another means of concealing subjectivity of the epistemic qualification signaled by the epistemic verbs. The use of the verb *think* in example (215) may serve to illustrate the point:

> 215. *There are good reasons to think that the embarrassment expression is difficult to fake: Several coordinated movements are involved in its characteristic display (averted gaze, compressed smile, head tilted away and down), and it is often accompanied by a blush. It is also possible that components of the embarrassment display, such as smile inhibition, use muscles that are beyond conscious control ... (references omitted). However, there is some reason to think that the expression can be at least partially faked.* (JPSP3)

It might be argued that the explicit reference to the evidential expression (e.g. *reason*) justifies the implicitly expressed personal judgment, while the whole impersonal structure construes the effect of an increased objectivity of what is essentially a subjective epistemic qualification. As can be seen, writers may vary the strength of the epistemic qualification by the choice of different premodifying elements of the noun *reason* (i.e. *there is some reason to think vs. there are good reasons to think*) and consequently decrease or increase their commitment to the proposed claims. The use of the given verbs in Impersonal Self-reference may also signal the intersubjective epistemic evaluations, as illustrated in the following example:

> 216. *Most such models assume either that all information sources receive equal weights or that the weights are unequal but fixed (e.g., some sources being more persuasive than others).* (JPSP1)

In the example above it is evident that writers do not assume a strictly personal responsibility for the epistemic qualifications but rather report on shared communal assumptions, presumably held by any disciplinary member in the given field of study. Example (216) is one of the rare instances of the use of inanimate agents in subject positions

co-occurring with the epistemic verbs in Engcor. However, a more detailed discussion on these constructions is provided in Chapter 9.

Finally, reference to shared disciplinary assumptions may be expressed by generic *one* (Biber et al., 1999), as indicated below:

> 217. *If one follows a parallel chain of logic, one may speculate that most mother-infant dyads are likely to find interacting without toys more stressful than interacting with an attractive set of toys that relieve the mother of the sole burden of interaction.* (DP5)

Lacking personal overtones, generic *one* has been a well-attested linguistic means of making generalizations in academic writing, which is in broad agreement with the impersonal academic writing style (Biber et al., 1999). By means of the given impersonal construction, writers construe a less personal opinion and emphasize that the stated assumption may equally be held by any other knowledgeable co-researchers (Kuo, 1999). It may be argued that by concealing their presence, writers emphasize a wish to engage with readers and build a common ground of a community of like-minded peers, who following the same logical line of reasoning would most likely make the same assumption (Hyland, 1998). In that sense, such uses of epistemic verbs may be interpreted as additional examples of previously discussed reader-oriented hedges (Hyland, 1998). The implicit inclusive reference of this kind might be one of the ways how writers build solidarity with readers, creating thus a shared, communal perspective on the construction of scientific knowledge (Hyland, 2005b).

In sum, impersonal and personal epistemic qualifications signaled by the use of epistemic verbs may show different rhetorical purposes. While Personal Self-reference strongly asserts the writers' voice, making their personal standings fully transparent, the use of the same verbs in Impersonal Self-reference conveys the writers' epistemic stance in a more distant and therefore tentative manner, making their hedging status more prominent.

The section that follows outlines the use of the epistemic verbs in acknowledging other scholars' work.

8.1.4 Epistemic verbs in Other-reference. Reference to other scholars' work has been recognized as an essential part of academic writing, as it generally provides a framework for positioning the current research against the background of the previous work (Hyland, 2004). By acknowledging other people's work through different citation patterns, writers confirm belonging to a particular strand of a discourse community but they also engage with previous work, creating a space for prospective research to engage and respond to theirs (Hyland, 2004). In other words, as Hyland observes, citation is an overt manifestation of intertextuality, whereby the traces of previous texts and the present text collaborate in expanding and constructing new knowledge.

With respect to the use of the epistemic verbs in Other-reference in Engcor, the overall findings show that Engcor writers do not make a frequent use of the given verbs to tentatively report on other scholars' work. As previously noted, this is generally in line with the results of large-scale corpus studies (Biber et al., 1999; Hyland, 2004), which do not report on the centrality of the use of cognitive verbs as reporting verbs.

As can be seen in Table A6 (Appendix 12), the highest frequency of the given verbs was recorded in the Introduction section (n/1000 = 0, 29), while their use in the remaining sections was extremely limited. Such distribution is generally expected given the overall rhetorical functions of each RA section. As noted, the purpose of the Introduction is to provide the general background of the existing state of knowledge and to situate one's research within it. Based on the present results, the use of the epistemic verbs in Other-reference seems to be a part of this general rhetorical strategy.

With respect to the surface structures of the citation patterns, the findings point to the overall higher frequency of the non-integral (n/1000 = 0, 07) as compared to integral citations (n/1000 = 0, 03). While in integral citations researchers' names are integrated into the sentence, in non-integral ones the bibliographical reference is given in the brackets or endnotes (Hyland, 2004), as shown in the following examples, respectively:

> 218. *That is, Lyons-Ruth et al. (1999) hypothesized that disorganization arises from an interactional environment that is so disrupted that organized infant attachment strategies are inadequate*. (DP5)
>
> 219. *This is because most cognitive operations are assumed to have multiple determinants, and the differential involvement of these determinants will result in separable age related effects (Salthouse, 1996b).* (DP2)

As reported in previous research (Thomson, 2002; Hyland, 2004), there is more to the use of integral vs. non-integral citation patterns in academic writing than simply incorporating the name of the cited author into the sentence or taking it out of it. Though a broader discussion on these issues is beyond the scope of the present study, it suffices to note that in the non-integral citation pattern the role of the author is suppressed and more importance is given to the research activities whereas integral citations indicate that a more prominent role is given to the author as an opinion holder rather than the research (Hyland, 2004).[127]

The predominance of the non-integral citation pattern with the epistemic verbs in Engcor suggests that writers attribute more importance to the reported assumption, belief or judgment than to the individual researchers whose role is therefore backgrounded. In addition, the summarized reported information presented in the impersonal verbal structure carries the intersubjective overtone of the epistemic evaluation, which might add to its generalizability.

[127] Hence, the alternative labels of the two citation patterns, viz. the information-prominent vs. author-prominent style (Cargill & O'Connor, 2009).

A higher frequency of the non-integral citations with the given verbs might suggest a preferred style of citation patterns in academic writing in psychology, whereby the status of the knowledge takes precedence over the individual contribution to it. This seems to be in line with the general guidelines on academic writing in psychology that advocate putting the ideas, findings, or issues generally in the foreground, while studies or scientists in the background (Kail, 2015). As Kail (2015) observes, the fact-oriented rather than study-oriented framing makes writers' arguments more effective and thus easier to read.[128]

However, epistemic verbs used to report on other scholars' epistemic judgments represent only one semantic class of the lexical verbs commonly used in reporting structures in academic discourse. In order to get a more comprehensive picture of the citation preferences in the field of psychology, a more extensive study would have to include other types of reporting verbs in addition to those indicated here.

To sum up, the use of epistemic verbs in Engcor shows the diversified functions that the given verbs may employ in disciplinary writing examined. The findings show that the highest incidence of the given verbs was reported in the Personal Self-reference. However, if we take a look at the corpus findings, we can notice that the frequency of only two verbs, viz. *hypothesize* and *predict* accounted for the highest frequency of the overall use of the given verbs in a personal dimension. In other words, when claiming that Engcor writers show preference to explicitly align themselves with their epistemic positions, it has to be emphasized that they do so particularly in announcing their research hypotheses and predictions the research is based on. Low frequency of other epistemic verbs indicates that in stating their assumptions or personal beliefs concerning interpretations, writers use

[128] In providing general guidelines for research article writing, Cargill and O'Connor (2009) advocate that integral citations should be used only with the specific purposes, such as indicating a gap which the current study wished to address. Otherwise, the text with the excessive use of the integral citations might be read like a list rather than a well-constructed argumentation.

Personal Self-reference at a substantially lower rate. This suggests the writers' tendency to conceal the Self as the source of the epistemic judgment when making knowledge claims that presumably carry more risk as compared to those referring to the research hypotheses as the inherent parts of the research conduct. To what extent the latter is a disciplinary convention or a preferred style of the journals the articles were extracted from could only be attested by a more extensive corpus-based study.

8.2 Epistemic verbs in Crocor

Congruent to their English counterparts, Croatian psychology writers also use epistemic verbs to convey subjective epistemic evaluations (220), refer to those generally held by disciplinary members (221), or tentatively report on the epistemic evaluations held by other scholars (222):

> 220. *U skladu s rezultatima prethodnih istraživanja pretpostavili smo da će se pokazati kako uvjerenja o sposobnosti u matematici i očekivanja uspjeha nisu empirijski odvojiva, dok će se moći razlikovati tri komponente vrijednosti – interes, korisnost i važnost.* (DI8)

> 221. *Značajnost spola je očekivana u ovom načinu suočavanja, jer se žene kulturološki smatraju slabijim spolom i na neki način poticane su na primjenu ovakva načina suočavanja.* (DI7)

> 222. *Holden i suradnici pretpostavljaju da postoji interakcija između sheme koju ispitanik ima prilikom odgovaranja i sadržaja njegova odgovora te da ta interakcija određuje duljinu vremena odgovaranja na čestice upitnika ličnosti.* (SP7)

Given that, at least to my knowledge, there has been no systematic linguistic account of the Croatian epistemic verbs to which the present study could draw, the list of the epistemic verbs compiled for the analysis of the Crocor data was primarily based on their English equivalents and rechecked in the Croatian grammar books that provide some information on the targeted verbs (Katičić, 2002; Barić et al., 2005). In addition, some broader discussions

on the linguistic properties of academic discourse in Croatian were also consulted (Ivanetić, 2003; Silić, 2008; Badurina, 2011). The full list of the verbs subjected to the frequency analysis can be found in Table B6, in Appendix 12.

The frequency analysis of the Crocor data revealed that the lexical verbs conveying the targeted epistemic meanings examined in the present study constitute a rather closed set of verbs. These primarily involve the verbs *pretpostaviti* and *smatrati* so the subsequent discussion essentially deals with the account of these two verbs. In line with the analysis of the English corpus data, prior to the discussion of the corpus findings, the attention is first drawn to the broad linguistic characterization of the Croatian epistemic verbs.

The grammar books of the standard Croatian language do not provide much information on the semantic and syntactic properties of the verbs in question. Katičić (2002) and Barić et al. (2005) list the verbs *smatrat*i and *pretpostaviti* into the group of Verba sentiendi or Sense Verbs (Cro. *Glagoli osjećanja*), broadly defined as the verbs which denote notions such as observing something, thinking about it or understanding it. The verbs *smatrati* and *pretpostaviti* are further subcategorized as the Verbs of Opinion or Intention which, as the label suggests, denote thinking and intending and include the verbs such as *misliti, pomisliti, držati, vjerovati, smisliti, namjeravati*, etc. (Katičić, 2002). Pranjković (2001) uses the hyperonym 'verbs that denote a mental activity' (Cro. *Glagoli koji označuju mentalnu djelatnost*), referring to the verbs of speaking, thinking, and feeling. The given verbs are broadly characterized as the verbs which denote a transfer or process of the information. Due to this, they require a clausal complement which conveys the content of the mental process. As previously mentioned, discussing the complement clauses in Croatian, Pranjković observes that the given verbs embedded in the matrix clause signal a speaker's or another person's attitude towards the content of the complement clause. In other words, the matrix clause containing these verbs subjectively modalizes the

complement clause which represents the communicative core of the sentence (Pranjković, 2001).

In order to provide a general overview of the Croatian epistemic verbs included in this study, the present discussion primarily draws on the previously outlined Nuyts' (2001) analysis of mental state predicates, which is supplemented by Cappelli's (2007) discussion on English verbs of cognitive attitude. As can be seen in the examples below, the epistemic verbs *vjerovati, pretpostaviti, smatrati* and *misliti* can construe both qualificational (a, b) and non-qualificational meanings (c):

a) *Mislimo/Vjerujemo/Smatramo/Pretpostavljamo da ćemo osvojiti prvenstvo.*

b) *I taj odnos će se u budućnosti, barem tako vjeruju/misle/smatraju/pretpostavljaju, mijenjati na njihovu štetu.*[129]

c) *Vjerujemo u tebe. /Mislimo na tebe.*

While in examples (a, b) the given verbs convey epistemic evaluations of the propositional content, in (c) they mark the mental processes. In addition, the Croatian verbs show the same relation between the type of meaning and the syntactic patterns like their English cognates. In other words, while the qualificational meaning is signaled by the complementizer *da* or a parenthetical use of the given verbs, in the non-qualificational meaning construal, the verbs take the obligatory prepositional complements. In semantic terms, the thread that binds the verbs under study is the qualification of a state of affairs as more or less likely but not certain. In a pragmatic sense, they enable a speaker to alternate a degree of his or her commitment to the propositional content and thus assert a claim with greater or lesser confidence. For example, in the following sentences:

[129]Retrieved from http://www.dw.com/hr/ima-li-diplomatskog-rje%C5%A1enja-za-siriju/a-17086193

d) *Vjerujemo/Pretpostavljamo/Smatramo da ćemo osvojiti prvenstvo.*

the speaker signals a varying degree of commitment to the propositional content, but still does not express a full warrant to it, as would be conveyed by a verb lexicalizing a higher degree of epistemic certainty, such as *tvrditi* or *jamčiti*. In other words, the given verbs signal a varying degree of epistemic distance from the categorical claim (Trbojević-Milošević, 2004). This may be attested by their positioning on the epistemic scale, which clearly points to the scalar epistemic meanings, as shown in:

e) *Vjerujemo da je to istina, (ali nismo sigurni).*

f) *Mislimo da je to istina, (ali nismo sigurni).*

g) *Pretpostavljamo da je to istina, (ali nismo sigurni).*

h) *Smatramo da je to istina, (ali nismo sigurni).?*

As can be seen, while *vjerovati* and *pretpostaviti* signal the speaker's uncertainty with respect to the propositional content, *smatrati* conveys a higher commitment on the part of the speaker and as such renders the proposed gloss rather dubious. This suggests that the verb *smatrati* occupies a higher position on the epistemic scale of likelihood as compared to *vjerovati, misliti* and *pretpostaviti* (Cappelli, 2007).[130] It may be argued that the speaker has more evidence to assert his or her claim in case of *smatrati*, which suggests a stronger presence of the evidential dimension in the meaning construal of this verb as compared to *vjerovati, misliti* and *pretpostaviti* (cf. Cappelli, 2007 for a similar discussion on English verbs of cognitive attitude).

To sum up, while *vjerovati, misliti* and *pretpostaviti* foreground tentativeness in expressing personal opinions or reporting on those of others, *smatrati* signals a higher

[130] Though the findings do not report on the use of the verb *misliti* in the present Croatian corpus, the verb is listed here to illustrate various degrees of epistemic certainty conveyed by the given verbs.

degree of commitment to the propositional content, which is based on a stronger piece of evidence than is the case with the former verbs. Due to this, the verb asserts personal attitudes with greater confidence. This might account for the well-entrenched use of *smatrati* rather than *misliti* in the Croatian academic discourse, albeit the Dictionary entries suggest their synonymous meanings,[131] a notion identified for some English verbs of cognitive attitude as well (Cappelli, 2007). In asserting their personal opinions which may be linguistically manifested in a more or less overt way, research article writers are expected to base their epistemic judgments on evidence, i.e. arguments which, as shown above, complies well with the semantics of the verb *smatrati* and accounts for its their typical use in academic discourse (Ivanetić, 1992; Badurina, 2011).

Drawing on Pranjković's (2001) account on the complement clauses with a particular reference to the verbs denoting mental activity as well as Badurina's (2001) discussion on the communication and mental verbs in Croatian,[132] the following structural patterns of the epistemic verbs were included in the analysis:

a) smatrati/pretpostaviti + *da/kako* complement clause**:** *Smatramo da je to rezultat veće usmjerenosti istraživača na mlade s ranim javljanjem društveno neprihvatljivoga ponašanja (npr. Moffitt, 1993; Patterson i sur., 1992), što dovodi do boljega prepoznavanja činitelja ključnih za ovu skupinu mladih.* (PT9)

b) smatrati + adjective/noun in instrumental case:[133] *Zbog toga se uloga podrške općenito smatra značajnijom u suočavanju s dijabetesom tipa 1, dok se kod oboljelih od dijabetesa tipa 2 odgovornost za tretman češće pripisuje samim oboljelima.* (DI7)

[131] a) *smatrati:* (što) misliti, suditi o čemu, cijeniti; (se) misliti o sebi, sam sebe držati čim/za što; uživati glas, biti shvaćen, prihvaćen od drugih, drugi ga drža za što/čim (Anić, 2003)

b) *misliti:* (što) smatrati, pretpostavljati, zamišljati, držati (Anić, 2003)

[132] Cro. 'Glagoli govorenja, mišljenja i/ili osjećanja' [lat. Verba dicendi, sentiendi, afectuum et voluntatis] (Badurina, 2011).

[133] The verb *smatrati* in this construction belongs to the group of transitive semi-copular verbs (Cro. *Prijelazni semikopulativni glagoli*) (Silić & Pranjković, 2005).

Naime, spol se već dugo vremena smatra moderatorom atribucija te se smatra da će žene vjerojatnije pokazivati pesimistični atribucijski stil, dok će muškarci uglavnom imati optimistični atribucijski stil. (PT6)

Having outlined the broad characteristics of the verbs under study, the discussion turns to the outline of the Crocor findings.

8.2.1 Overall findings of the epistemic verbs in Crocor. Congruent to the analysis of the Engcor data, the distributional and discourse functions of the given Croatian verbs are followed with respect to the type of the references previously identified and will not be further accounted for.

As can be seen in Table B5 (Appendix 12), the highest frequency of the Croatian verbs was recorded in the Introduction (n/1000 = 2, 26) while their use was significantly lower in the Discussion section (n/1000 = 1, 16). The Results section showed a rather low frequency of occurrences of the given verbs (n/1000 = 0, 48), while their use in the Method section was almost non-existent (n/1000 = 0, 08). As already outlined with respect to the previously discussed epistemic devices, the overall distribution of the verbs under study generally mirrors the broad characterization of the rhetorical functions of RA sections, whereby the Introduction and Discussion sections are characterized as more interpretative and evaluative, as compared to the Method and Results which are typically descriptive and fact-oriented.

With respect to the type of reference, Croatian psychology writers used the given verbs more frequently in Self- (n/1000 = 0, 79) rather than Other-reference (n/1000 = 0, 41) (cf. Table B5, Appendix 12). As can be seen in Figure 11, the highest frequency of the epistemic verbs used in Self-reference was recorded in the Introduction (n/1000 = 1, 37),

followed by the Discussion section (n/1000 = 0, 84), while in the remaining two sections, their use was rather low. The use of the given verbs in Other-reference generally followed the distributional patterns of those in Self-reference, though their use was absent in the Method section.

As can be seen in Table B6 (Appendix 12), a striking feature of the use of the epistemic verbs in Crocor is their limitation on the two fundamental verbs, vis. *pretpostaviti* and *smatrati*, the former showing a slightly higher frequency of occurrences (n/1000 = 0, 62) than the latter (n/1000 = 0, 55). The remaining verbs show either an extremely low or no frequency of occurrences. The section that follows deals with the use of the epistemic verbs with respect to each type of reference.

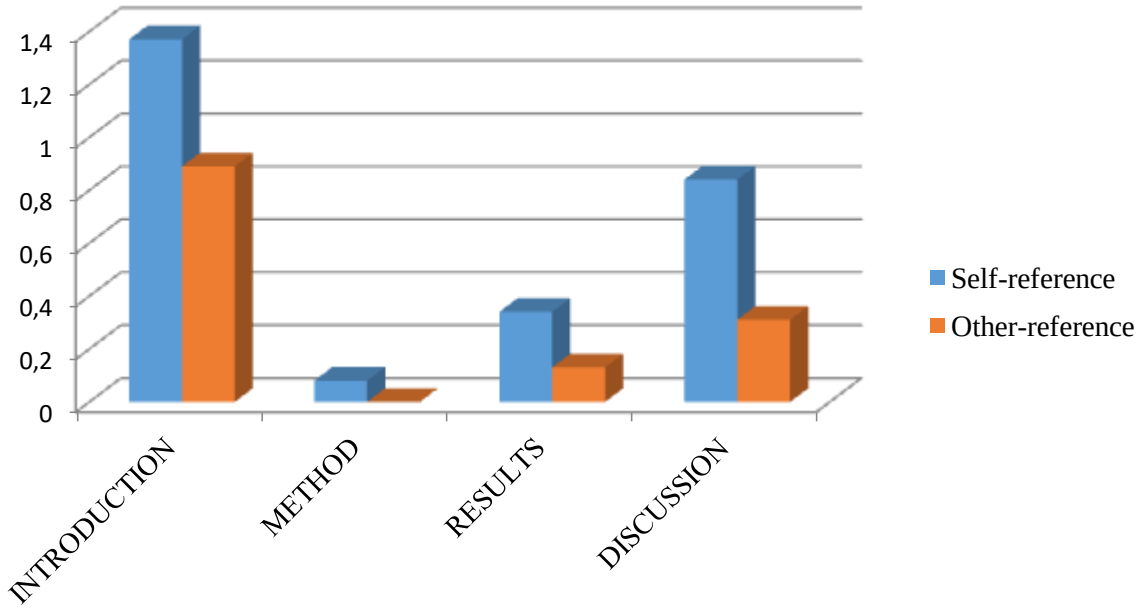

Figure 11. Distribution of the epistemic verbs in Self- and Other-reference across IMRAD in Crocor

8.2.2 Epistemic verbs in Self-reference. When it comes to the use of the epistemic verbs in Self-reference, the Crocor findings show that they were significantly more frequently employed in the Impersonal (n/1000 = 0, 63) rather than Personal Self-reference (n/1000 = 0, 15). This suggests that, concerning the examined verbs, the Crocor writers do not tend to personally align themselves with their epistemic evaluations. As already stated in the discussion of the Engcor findings, due to the fact that the study concentrates only on a single verbal group, it is hard to generalize on the preferred patterns with respect to the use of the active and passive verb forms in Crocor. Nevertheless, based on the present corpus findings, it might be suggested that a higher frequency of impersonal vs. personal forms is in line with rather broad accounts of the academic writing style in Croatian, which generally report on the prevalence of the impersonal forms in scientific writing. As previously discussed, this conforms to the notion of the predominantly abstract nature of scientific communication, as reported by the more traditionally-oriented approaches to the scientific style in Croatian (Zelenika, 1998; Silić, 2006).

Table 8

Overall distribution of the epistemic verbs in Personal and Impersonal Self-reference in Crocor

	Raw frequency	**Normalized frequency n/1000**
Personal Self-reference	22	0,15
Impersonal Self-reference	91	0,63

8.2.2.1 Personal Self-reference. As can be seen in Table B5 (Appendix 12), the Crocor findings show that the frequency of the epistemic verbs in Personal Self-reference

was most frequently employed in the Discussion (n/1000 = 0, 31) and to a much lesser extent in the Introduction section (n/1000 = 0, 10). In the two middle RA sections, the use of the given verbs was rather negligible. The verb *pretpostaviti* was the most frequently used verb in Personal Self-reference, particularly in the Discussion section (n/1000 = 0, 17), followed by the verb *smatrati* (n/1000 = 0, 08). The verbs *vjerovati* and *držati* each showed only one occurrence (n/1000 = 0, 02). In the Introduction section, only *smatrati* and *pretpostaviti* were used, showing a similar frequency of occurrences, with the former pointing to 0, 04 occurrences and the latter 0, 06 occurrences per 1000 words.

The examination of the Croatian sub-corpus indicates that the epistemic verbs perform congruent discourse functions as their English equivalents. For example, in the Introduction section, writers use the explicit Self-reference forms to foreground research hypotheses, making them unambiguously explicit, as suggested by the following example:

> 223. *U skladu s rezultatima prethodnih istraživanja pretpostavili smo da će se pokazati kako uvjerenja o sposobnosti u matematici i očekivanja uspjeha nisu empirijski odvojiva, dok će se moći razlikovati tri komponente vrijednosti – interes, korisnost i važnost*. (DI8)

In addition, while positioning their research against the background of the existing state of knowledge, writers may use the first-person inflected forms to explicitly signal personal standings towards the issues they evaluate as relevant to their research objectives, as shown in the example below:

> 224. *Osim toga, kako je perfekcionizam poznat kao čimbenik ranjivosti za razvoj velikog broja psihičkih problema i neefikasnost, smatrali smo da bi mogao biti u podlozi akademskog neuspjeha.* (PT3)

In the Discussion section, the discourse functions of the given verbs are primarily concerned with asserting personal opinions while interpreting research findings, as shown below:

225. *Smatramo da je to rezultat veće usmjerenosti istraživača na mlade s ranim javljanjem društveno neprihvatljivoga ponašanja (npr. Moffitt, 1993; Patterson i sur., 1992), što dovodi do boljega prepoznavanja činitelja ključnih za ovu skupinu mladih.* (PT9)

226. *To je točno, ali ne vjerujemo da ima bitnog utjecaja jer brojne studije pokazuju daje utjecaj trajanja nezaposlenosti na psihičko zdravlje minimalan.* (SP8)

Congruent to the use of the epistemic verbs in Engcor, the strength of writers' personal commitment signaled by the choice of an epistemic verb may vary due to the contextual clues, i.e. the presence or absence of other epistemic devices. This may be attested by comparing the extracted sentences containing the first-person inflected forms of *smatrati*. For example, in sentence (224) the writers use the given verb to directly express their personal assumption, albeit tentatively, which is signaled by the presence of the conditional form of the modal verb *moći*. In other words, the writers signal the extent to which they are ready to commit themselves to the claims they put forward, which evidently suggests some degree of uncertainty.

By contrast, the use of *smatrati* in sentence (225) suggests a higher level of epistemic certainty, indicating the writers' strong commitment to their claims. It may be argued that the presence of the personal form of s*matrati* reinforces this commitment even further (Cappelli, 2007). Yet, in example (227) below, the same verb assumes the role of a marker of the personal opinion only, without any estimation of the likelihood of the state of affairs on the part of the writer. As can be seen, by using the inflected form of *smatrati* writers are asserting their personal recommendations with respect to the prospective research:

227. *Polazeći od nalaza ovoga istraživanja koje upućuje na specifične obrasce činitelja rizika u tri skupine niske i srednje razine rizičnosti smatramo da je u daljnjim istraživanjima potrebno obuhvatiti cjelokupni kontinuum društveno neprihvatljivoga ponašanja (od niske do ekstremne razine).* (PT9)

The writers could have conveyed the same idea by leaving out the self-inflected form of the verb but the decision to intrude into the text may be regarded as a rhetorical strategy aimed to highlight the relevance of their study and their personal contribution to the ongoing research. In that sense, *smatrati* may be considered as performing the same rhetorical functions as those already detected for the English verb *believe*. A writer's personal commitment to the claim can be made even stronger by the use of the verb *držati*,[134] as in (228), though only one occurrence of the given verb in the whole corpus does not speak in favor of its representative status in the disciplinary writing examined.

> 228. *Držimo da naši rezultati predstavljaju originalan prilog potkrjepi hipoteze o zakrivljenom odnosu između dobi i negativnog zdravstvenog učinka nezaposlenosti. Kao takav, naš nalaz ima svoj teorijski i praktični značaj.* (SP8)

While the above examples make reference to the strictly subjective epistemic evaluations, in the following examples, the highlighted epistemic qualifications may be considered as performing a different discourse function.

> 229. *U tom slučaju, mogli bismo pretpostaviti da je procjena gornje granice heritabilnosti (indeks familijarnosti) zapravo jednaka indeksu heritabilnosti u užem smislu, tj. da upućuje samo na djelovanje aditivnih genetskih efekata.* (SP10)

> 230. *Takav se postupak može primijeniti u svim slučajevima kada možemo pretpostaviti da ispitanici mogu imati visoke rezultate na više skala i kada nam je informativniji profil rezultata nego jednostavna klasifikacija po kojoj ispitanik pripada onoj skupini na kojoj ima najviši ili iznadprosječan rezultat.* (DI1)

Though not explicitly present, the first person plural pronoun *mi* (Engl. *we*) might be regarded as inclusive *mi*, referring to the writer as well as the potential readers as members

[134] According to Anić's (2003) Dictionary of the Croatian standard language, the meaning of *držati*, as in *Držim da sam u pravu* is considered to be synonymous to the meanings of *smatrati* and *misliti*, though this meaning of the given verb is marked as a neologism.

of the given disciplinary community.[135] As can be seen, the epistemic qualifications signaled by the inclusive *mi* and the epistemic verbs invoke a reader more explicitly into the text, suggesting the communal nature of a scientific enquiry (Hyland, 1998).

Reader-oriented epistemic qualifications are presented from a shared perspective, which may be considered as a signal of establishing writer-reader solidarity (Baumgarten, 2008). The examples of this kind may serve to unambiguously illustrate the interactive character of a scientific text, whereby both writers and readers contribute to the communal construction of disciplinary knowledge.

However, concerning the use of the epistemic verbs examined here, such occurrences are severely limited, which along with the higher frequency of Impersonal Self-reference suggests that Crocor writers prefer remaining in the background when conveying their epistemic stance. Nevertheless, though self-inflected forms of the Croatian verbs under study are relatively few in number, their presence in Crocor seems to challenge the broad characterization of the Croatian scientific register as an instance of an abstract and impersonal type of communication, resisting the explicit manifestations of the writers' overt subjective stance (Zelenika, 1998; Silić, 2006).[136] The present findings, however, seem to be in line with some more contemporary accounts of academic writing in Croatian (Gačić, 2012). Thus, Gačić (2012) suggests that though the overuse of the 1st Person Sg or Pl pronouns may sound too intrusive, their use is justified when a claim needs to be particularly emphasized, such as a new finding or innovative interpretation. This view contests the

[135] In Hyland's (2005b) *Stance and Engagement* model of academic interaction, the explicit signals of the writer's engagement with readers refer to the Engagement dimension which generally subsumes various linguistic means writers use to acknowledge the presence of the readers and engage with them in an implicit dialogue. Likewise, in the metadiscourse model (Hyland, 2005b), Engagement markers (such as the above indicated) are subsumed under the broad interactional dimension of metadiscourse pointing to the different ways how writers interact with readers by stepping in and commenting on the content of their writing.

[136] Admittedly, some authors strongly oppose the use of the impersonal writing style in scientific texts. For example, Silobrčić (1994) strongly recommends the use of the active voice in scientific texts due to its clarity and directness and accordingly the use of the 1st Person Singular or Plural pronouns.

general notion of scientific writing in Croatian whereby the authorial identity is subordinated to the content of the scientific text (Silić, 2006).

The approach adopted in this study, therefore, follows the alternative conceptualization of the role of the explicit self-reference forms in research article writing, which has been addressed by some Croatian writers, too. Thus, Ivanetić (1992) exemplifies a range of self-inflected verbal forms which writers use to organize the macrostructure of the research articles and navigate their readers through the text. According to the author, writers may use a range of devices to explicitly assert their personal attitudes, comment on the unfolding text or engage with readers by establishing a sense of a communal construction of knowledge.

Such observations seem to be in line with already discussed views on the role of explicit authorial presence in academic writing. As Hyland (2001) notes, writers' explicit projection into the text, and transparent commitment to the personal claims, might have the rhetorical effect of strengthening the plausibility of those claims and consequently the research itself. By overtly displaying their personal stance towards the matters at hand, writers might convey the image of credible scholarly authorities ready to confidently present their arguments rather than keeping themselves in the background, as implied by the use of impersonal linguistic forms (Ivanetić, 1992; Hyland, 2001). According to Hyland (2001), this accounts for the highest frequency of the self-inflected verb forms in the most argumentative sections of RAs, where the writers' overt presence may highlight their personal contributions to the construction of new knowledge, assisting them in gaining credit for the knowledge claims.

8.2.2.2 Impersonal Self-reference. In structural terms, the use of the epistemic verbs in Impersonal Self-reference is associated with different impersonal patterns, such as *smatralo se da, pretpostavlja se da, može se pretpostaviti da,* etc. The occurrences of this type (but also their inflected cognates) can be found under different labels in Croatian literature, such as phrasal expressions functioning as text connectors (Silić, 2006) or modal expressions (Badurina, 2011).[137] Their use is academic writing is associated with expressing the writers' commitment, assumption, doubt, etc. with respect to the truth of a proposition and as such represent highly frequent features of scientific texts (Silić, 2006; Badurina, 2011).

As noted earlier, the Crocor findings point to a higher frequency of the given verbs in Impersonal rather than Personal Self-reference. An additional difference between the two dimensions reflects the use of the individual verbs. While in the Personal Self-reference the frequencies of the two verbs were relatively similarly distributed across the RA sections, the corpus findings show a predominant use of *pretpostaviti* in Impersonal Self-reference (n/1000 = 0, 46), as compared to *smatrati* (n/1000 = 0, 17) (Table B5, Appendix 12). The highest distribution of the occurrences of *pretpostaviti* in Impersonal Self-reference was recorded in the Introduction (n/1000 = 0, 91) and Discussion sections (n/1000 = 0, 46), which reflects their overall rhetorical functions, while its use was almost non-existent in the remaining two RA sections.

In the Impersonal Self-reference dimension, the verb *pretpostaviti* may occur in the form of the periphrastic passive (231) or impersonalization (Cro. *obezličenje*) (232), as illustrated below:

[137] The original Croatian terms are *frazni izrazi* (Silić, 2006) or *modalni izrazi* (Badurina, 2011). In addittion, Velčić (1987) uses the term *propozicioni konektori* (Engl. *propositional connectors*) to refer to the connectors, such as *nema sumnje da, čini se da, smatramo da*, etc.

231. *Stoga je u ovom radu pretpostavljeno da će i stav prema multikulturnosti i stav prema asimilaciji biti značajni prediktori stavova prema školskoj i socijalnoj integraciji.* (DI2)

232. *Ovim se istraživanjem želio ispitati doprinos socijalne anksioznosti, vjerovanja o potrebi skrivanja pravoga ja i doživljavanja pozitivnih emocija kvaliteti prijateljskih odnosa, uz kontrolu spola sudionika/ca istraživanja. Prema podacima se dosadašnjih istraživanja pretpostavlja da će kod socijalno anksioznijih osoba biti izraženije vjerovanje o potrebi skrivanja pravoga ja te ...* (PT4)

In both of these structures, the contextual clues make it unambiguously clear that the implicit agents of the passive verb forms refer to the writers of the given research articles who have opted for the impersonal linguistic form of stating their research hypotheses. Indeed, stating the hypothesis or more general assumptions with respect to the expected research outcome are the predominant discourse functions which the impersonal forms of the verb *pretpostaviti* perform in the Introduction section. Alternatively, the same discourse function may be performed by means of the impersonal form of the modal verb *moći + infinitive form of the epistemic verb*, as illustrated in the following sentence:

233. *Na temelju se rezultata prethodnih istraživanja može pretpostaviti da će mladi sa sigurnim stilom privrženosti ujedno imati i višu kvalitetu privrženosti roditeljima od mladih s nesigurnim stilovima privrženosti.* (PT8)

As previously discussed in Chapter 4, the presence of the modal suggests the writer's reluctance to make a stronger commitment to the assumption, which is, nonetheless, not affected by it. It might be assumed that the co-occurrence of the modal and the epistemic verb has a cumulative hedging effect. On the one hand, the assumption is made indirect through the choice of the impersonal construction, which by definition reduces a writer's personal commitment to the claim. On the other hand, the use of the modal verb further reduces its force, suggesting additional caution in presenting one's assumptions.

Given the frequent occurrences of the pattern *može se/moglo bi se pretpostaviti da* in Crocor, it might be argued that it functions as a fixed phraseological pattern in the disciplinary writing examined, serving different discourse functions depending on the RA section in which it is employed. Thus, in the Introduction section the given pattern is used to signal assumptions related to the research outcomes. On the other hand, in the Discussion section the discourse function of the given pattern is primarily related to the interpretations of the research findings. A requirement for speculative language particularly in RA Discussions may account for a greater variation in the use of the given pattern in this section. In other words, the slot in which *moći* occurs may be occupied by an alternative lexical device (e.g. preposition *za* or adverbial phrase *moguće je*), presumably performing the same hedging purpose, as shown below:

> 234. *Stoga, za pretpostaviti je da kod takvih pojedinaca usmjerenost na postizanje što boljeg učinka dovodi do ustrajnosti, regulacije truda, bolje organizacije vremena i okruženja u kojem se uči kako bi se ostvarilo željeno postignuće.* (SP3)

> 235. *U pokušaju tumačenja dobivenih rezultata moguće je pretpostaviti da do produženja odgovora u slučaju prezentacije podražaja u LVP dolazi zato što nakon obrade pristiglih informacija u DH ispitanik treba vokalno reagirati.* (SP1)

It is interesting to note that the modal verb *valjati* may also be exploited in the given pattern, though its use is nowhere near as salient as that of *moći*. Though, the modal meaning of *valjati* is associated with a higher epistemic commitment as compared to the modal *moći* (Kalogjera, 1982), the use of the two modals in the given pattern seems to be interchangeable (i.e. *valja/može se pretpostaviti*), achieving thus the same pragmatic effect, as shown in:

> 236. *Štoviše, grupe visokoga statusa pokazuju veću unutargrupnu pristranost od grupa niskoga statusa (Mullen i sur., 1992.; Jackson, 2002.; Verkuyten i Reijerse, 2008.), pa valja pretpostaviti da i ta činjenica pridonosi da kod većinske grupe i*

izraženiji identitet i unutargrupna pristranost predstavljaju značajne odrednice nepodržavanja integracijskih stavova. (DI2)

While the impersonal forms of the verb *pretpostaviti* are mainly (though by no means exclusively) used to refer to the writers' subjective claims, the impersonal foms of *smatrati* are predominantly used to refer to the intersubjective epistemic evaluations, signaling generally held disciplinary assumptions or viewpoints, as shown in:

237. *Uzrok ovoga tipa dijabetesa također nije pouzdano utvrđen, no smatra se da kombinacija nekih rizičnih faktora, poput debljine i tjelesne neaktivnosti, te starija životna dob imaju glavnu ulogu u nastanku bolesti.* (DI7)

Overall, given the indicated rhetorical functions of the two verbs, higher frequencies of *pretpostaviti* than *smatrati* suggests that writers prefer impersonal forms in conveying subjective epistemic evaluations rather than referring to the intersubjective ones, as suggested by the use of the verb *smatrati*.

Congruent to the use of the impersonal forms of the epistemic verbs in Engcor, the occurrences of the Croatian epistemic verbs exemplified here may be related to the instances of writer-oriented hedges (Hyland, 1998). According to the author, the core feature of this type of hedges is concealing a writer (or human agents generally) as the source of the epistemic judgment, signaling avoidance of a strong personal alignment with the claims proposed and thereby explicit responsibility for them. However, the motivation for the impersonal forms of conveying personal stance may be motivated by other reasons as well. For instance, when asked about the reasons for adopting a more impersonal as opposed to personal style in writing her research articles, one of my Croatian informants said the following:

"When I write, I would say that using a more impersonal style might be like one of the tools that helps me stay objective; it helps to me keep me in a state of mind of

readiness to reexamine my own ideas from different angles and my impression is that in a subtle way this also leaves more space for the reader to do the same." (Interviewee 1)

With respect to the overall distribution of the given verbs in Impersonal rather than Personal Self-reference, the Crocor findings indicate that the Croatian writers of research articles in psychology prefer to express their subjective (but also intersubjective) assumptions and speculations in impersonal rather than personal forms. However, in order to obtain a more comprehensive perspective on the use of the personal vs. impersonal forms in Self-reference dimension, the present findings should be supplemented by extending the analysis onto the additional verbal groups referring to other research activities beyond those of cognitive acts (Hyland, 2004).

8.2.3 Epistemic verbs in Other-reference. As can be seen in Table B5 (Appendix 12), compared to the overall frequency of the epistemic verbs in Self-reference, Crocor writers used the given verbs significantly less often to report on other scholars' work (n/1000 = 0, 41). With respect to the distribution of the epistemic verbs in Other-reference across IMRAD, the highest frequency of occurrences was recorded in the Introduction (n/1000 = 0, 89), followed by the Discussion (n/1000 = 0, 31) and the Results section (n/1000 = 0, 13), while no occurrences were recorded in the Method section. The highest density of the citations in the Introduction section is in line with its rhetorical function of setting the scene for the unfolding research by positioning it within the scope of the existing body of knowledge.

The corpus findings show that the verb *smatrati* was employed significantly more frequently (n/1000 = 0, 32) than *pretpostaviti* (n/1000 = 0, 06) in Other-reference. This

might not be surprising given the previously discussed semantics of the two verbs in question. As noted before, it is assumed that *smatrati* indicates that a personal view is supported by some kind of evidence which in the context of academic writing suggests scientific argumentation. It is therefore expected that other scholars' views grounded on some evidence are more relevant to refer to than their assumptions only.

Concerning the type of the citations, the integral citation form was significantly more preferred (n/1000 = 0, 32), than the non-integral form (n/1000 = 0, 08) (Table B5, Appendix 12). As previously indicated, the predominance of integral citations suggests that writers give more prominence to researchers as holders of opinions rather than to the reported cognitive act, as in:

> 238. *Kuehner (2003) smatra da to može biti jedan od razloga zašto se spolne razlike u depresivnosti počinju manifestirati u ranoj adolescenciji.* (PT6)

In non-integral citation forms, the summarized propositional content is most often presented in the form of a generalization (Hyland, 2004), pointing to the intersubjective characterization of the claim, as shown below:

> 239. *S tim u skladu pretpostavlja se da su ekstraverzija i neuroticizam posljedica rada biobihevioristčkih sustava jednakih onima koji se nalaze u podlozi PA i NA – sustava približavanja i izbjegavanja (Davidson, 1998.), odnosno bihevioristčko – aktivacijskoga i bihevioristčko – inhibicijskoga sustava... (References omitted).* (DI4)

Overall, the preceding section has shown that the epistemic verbs used by Crocor writers occur in the same types of references as the epistemic verbs used by Engcor writers. Based on the present findings it may be concluded that the epistemic verbs are predominantly employed in implicit forms to convey the writer's subjective stance or refer to that shared by other disciplinary members.

8.3 Comparison of the Engcor and Crocor findings

The final section in this chapter presents the comparative findings from both sub-corpora with the aim of revealing the patterns of similarities and differences regarding the use of epistemic verbs in research articles under study. Particular attention is given to the similarities and differences with respect to the type of reference as these were the dimensions along which the given verbs were followed in each sub-corpus. As can be seen in Table 9, the overall findings show that epistemic verbs were used more frequently in Crocor (n/1000 = 1, 20) than in Engcor (n/1000 = 0, 76). Though it is difficult to account for the differences in the overall distribution of the given verbs between the two sub-corpora (especially because of the lack of the empirical findings regarding the Croatian academic discourse), a lower distribution of the epistemic verbs in Engcor might be in broad agreement with the overall less frequent use of the mental verbs in the academic register, as compared to other verbal groups (cf. Biber et al., 1999).[138]

As can be seen in Table 9, concerning the two major types of reference, the findings show that in both sub-corpora epistemic verbs were used more frequently in Self- than in Other-reference.

Table 9

Distribution of the epistemic verbs in Self- and Other-reference in Engcor and Crocor

	Epistemic verbs in Engcor n/1000	**Epistemic verbs in Crocor n/1000**	**Total n/1000**
Self-reference	0,65	0,79	1,44
Other-reference	0,10	0,41	0,51
Total	**0,75**	**1,20**	**1,95**

[138] According to the LSWE Corpus findings (Biber et al., 1999), the most common semantic domains of the verbs involve the activity (e.g. *make, give, take, use*) and existence verbs (e.g. *include, involve, seem*).

The most striking discrepancy in the findings between the two sub-corpora was recorded in the use of the epistemic verbs in Other-reference, with Crocor results pointing to 0,41 and Engcor to 0,10 occurrences per 1000 words. As previously mentioned, academic discourse in English does not show a particular tendency towards the use of mental or cognition verbs as reporting verbs (Biber et al., 1999). Indeed, previous studies on research article writing have shown that writers report more frequently on other scholars' research activities, such as findings (e.g. *show, demonstrate*) and procedures (e.g. *analyze, explore*) or on verbal activities (e.g. *suggest, discuss*) rather than cognitive acts (Thomas & Hawes, 1994; Hyland, 2004).[139]

As can be seen in Figure 12, with respect to the specific subtypes of Self- and Other-reference, the corpus findings show the distinctive distributional patterns of epistemic verbs across the two sub-corpora. The overall frequencies of the given verbs in Engcor and Crocor are relatively similar only with respect to the non-integral citation forms, while in all other reference types there is a marked discrepancy between the findings. In regard to Personal Self-reference, English psychology writers used the epistemic verbs significantly more frequently (n/1000 = 0, 49) as compared to Croatian writers (n/1000 = 0, 15). This suggests that English writers prefer aligning themselves personally with their epistemic judgments, showing unambiguously their epistemic positions, particularly with respect to announcing their research hypotheses and predictions. By contrast, though the use of the verbs in Personal Self-reference is not completely absent in Crocor, the Croatian writers show preference to impersonal forms when expressing their subjective but also intersubjective epistemic judgments.

[139] In the typology proposed by Thomas and Hawes (1994), *hypothesize* is classified into the group of discourse verbs which refer to linguistic activities. While the verb refers to experimental activities, in particular those involving activities occurring prior to the research process, in this study it is considered as a verb primarily referring to the mental process.

With respect to the use of epistemic verbs in Other-reference, as previously mentioned, the comparative findings show a markedly higher frequency of the Croatian verbs as compared to the English verbs. This is particularly salient with respect to the use of the integral citation forms, with the Croatian verbs showing 0, 32 occurrences per 1000 verbs, as compared to a very low frequency of the English verbs (n/1000 = 0, 03). Overall, a preference to integrate a reported author's name into the structure of the sentence rather than taking it out suggests that Croatian writers give particular attention to the recognition of the authors as originators of the ideas being evaluated (Hyland, 2004). To what extent this is a preferred citation pattern in Croatian disciplinary writing can only be attested by analyzing the additional semantic groups of the reporting verbs.

While comparing the corpus findings, it should be noted that the number and the choice of the verbs in the respective sub-corpora do not match. The findings point to a more diversified use of the epistemic verbs by English writers as compared to their Croatian counterparts. More specifically, there were 9 epistemic verbs which showed more than 5 occurrences in the English corpus as a whole, while only 2 Croatian verbs matched this criterion. However, the frequencies of the individual verbs show that both English and Croatian writers have a tendency to use a limited set of epistemic verbs in their writing. Thus, in Engcor the most central verbs are *hypothesize* and *predict*, while *pretpostaviti* and *smatrati* are the most salient epistemic verbs in Crocor. The highest frequency of the equivalent verbs, viz. *hypothesize* and *pretpostaviti* in the respective sub-corpora may point to the saliency of hypothesis as the one of the most significant tools in scientific endeavor (Darian, 2003).

Overall, it should be pointed out that the restricted scope of the present study does not allow drawing any firmer conclusions on the rhetorical styles between the two languages. In that sense, the implications regarding the specific aspects of the rhetorical

preferences between the two languages examined here must be regarded within the boundaries of the present study. Based on the current corpus findings, it may only be suggested that the English psychology writers adopt a more personal approach with respect to the use of epistemic verbs, whereas their Croatian counterparts prefer a more impersonal style in that respect. In addition, the Croatian writers use the given verbs more frequently in evaluating other scholars' work, with a particular emphasis on foregrounding the cited authors.

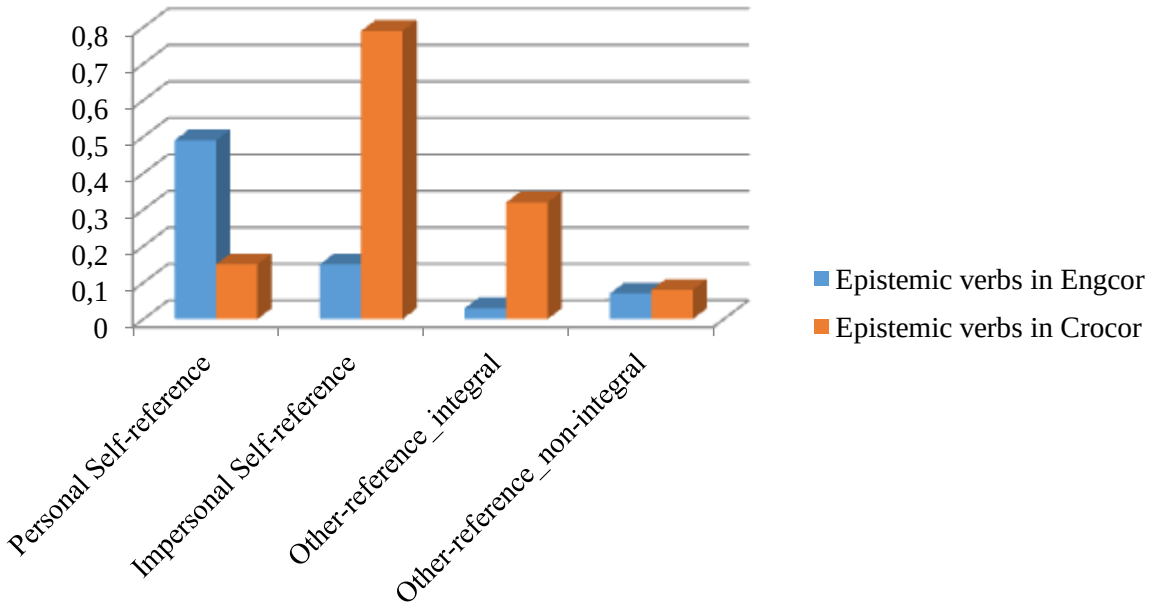

Figure 12. Distribution of the epistemic verbs in Engcor and Crocor with respect to the type of reference

9. Epistemic-evidential verbs

9.1 Epistemic-evidential verbs in English

The final category of the linguistic devices included in the present analysis comprises only two English verbs, viz. *seem* and *appear*. As the subsequent discussion will show, the English verbs *seem* and *appear* share the status of the prototypical hedging devices in academic writing, used to convey a tentative stance mostly without overt manifestation of its source (Salager-Meyer, 1994; Hyland, 1996a, 1996b; Hyland, 1998; Vihla, 1999; Hyland, 2005a, 2005b; Vold, 2006a, 2006b; Fraser, 2010). The following example extracted from Engcor may serve to illustrate the point:

> 240. *From these findings, it appears that while perceptions of parenting at age 17 predict what kind of romantic relationship story individuals choose to tell almost 10 years later, this effect may be largely dependent on individuals' general attachment styles (see Table 5).* (DP6)

As can be seen, the presence of the verb *appear* signals that a writer engages in cautious interpretations of the research findings, indicating his or her distance from the full commitment to the proposed claim. The fact that the pragmatic functions of the given verbs are commonly jointly discussed in academic writing (Hyland, 1998; Vartalla, 2001; Vold, 2006a) is likely due to the overlaps in the semantics of the given verbs,[140] stemming from their etymology.[141]

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[140] *seem, v./appear, v.* = to give the impression of being or doing sth (Oxford Learner's Dictionary of Academic English, 2014)

[141] c. 1200, "t**o appear to be**;" c. 1300, "to be fitting, be appropriate, be suitable," though the more recent sense in English is the etymological one; from Old Norse soema "to honor; to put up with; to conform to (the world, etc.)," verb derived from adjective soemr "fitting," from Proto-Germanic *somi- (source also of Old English som "agreement, reconciliation," seman "to conciliate," source of Middle English semen "to settle a dispute," literally "to make one;" Old Danish some "to be proper or seemly"), from PIE *som-i-, from root *sem- "one, as one" (see same). Related: Seemed; seeming. // **appear, v. =** late 13c., "to come into view," from stem of Old French aparoir (12c., Modern French apparoir) "appear, come to light, come forth," from Latin apparere "to appear, come in sight, make an appearance," from ad- "to" (see ad-) + parere "to come forth, be visible." Of persons, "present oneself," **late 14c. Meaning** "**seem**, have a certain appearance" is late 14c. Related: Appeared; appearing. Retrieved from http://www.etymonline.com/

The given verbs are discussed separately in the present analysis primarily due to their complex linguistic status which is implicated in the choice of the label of the category itself.

Admittedly, the verb *seem* has received more attention in linguistic accounts, presumably due to its more frequent use (Biber et al., 1999). As the following discussion will show, *seem* has been accounted for both in terms of an evidential (Chafe, 1986) and an epistemic marker (Biber et al., 1999), depending on how the relation between the linguistic categories of evidentiality and epistemic modality is understood. However, some accounts show that the given verb may not be assigned the either/or status, given that its polysemous nature gives rise to both evidential and epistemic readings (Aijmer, 2009; Usonienė & Šinkūnienė, 2013).

According to Biber et al. (1999), the verbs *seem* and *appear* have been traditionally categorized as copular verbs, which are considered to be the most common type of the verbs of existence or relationship.[142] In particular, *seem* and *appear* belong to the group of the current copular verbs, used to "identify attributes that are in continuing state of existence" (p. 436). In academic prose, the given verbs are most commonly used to denote epistemic likelihood or more generally epistemic stance. Quirk et al. (1985) discuss *seem* and *appear* as the 'Verbs of seeming' (along with the perception verbs such as *look, sound, feel*, etc.), classified as a type of current copular verbs. Huddleston and Pullum (2002) argue that the given verbs convey modal meanings, in that they weaken the unmodalized statements, which may be illustrated by contrasting a pair of sentences, such as *John seemed to convince them* as opposed to *John convinced them.*

The modal meaning of *seem* is also present in Dixon's (2005) account of SEEM verbs. According to the author, *seem* is used when the Arbiter indicates his or her lack of full

[142] According to Biber et al. (1999), the verbs of existence or relationship are defined as the verbs reporting "a state that exists between entities", including the verbs such as *stay, live, exist, contain*, etc. (p. 364).

certainty with respect to the appropriateness or correctness of the statement expressed by the adjectival (e.g. *Our mower is/seems to be/seems hard to operate*) or clause complement (e.g. *It seems that Mary found the body*),[143] possibly because of the lack of evidence used to provide more support to the claim. Though the Arbiter may not be explicitly stated, it may always be implied from the pragmatic context, as it either refers to an individual or like-minded people, as illustrated by the following examples*: It seems (to me/to everyone) that Mary found the body*.

However, apart from the modal readings, some linguistic accounts treat *seem* and *appear* as evidential markers. For example, in his broad characterization of evidentiality, Chafe (1986) posits that constructions such as *seem* are pure markers of inference or induction, indicating however a lower degree of certainty in the conclusion than e.g. *must*. Furthermore, as an evidential marker *seem* can signal that the information has been acquired through hearsay rather than direct evidence, as in:

a) *"Well Schaeffer it seems had just found the latest article from the Smithsonian."*[144]

Furthermore, some scholars point to the polypragmatic status of 'seem' verbs, indicating that they may exhibit both epistemic and evidential meanings (Vihla, 1999; Usonienė & Šinkūnienė, 2013). Such instances are particularly evident in the occurrences in which *seem* takes an adjectival complement.[145] For instance, in the sentence:

242. *Such ideas seemed plausible, given the findings from the marital literature that demonstrate how types of couple narratives early in a marriage can be predictive of future relationship development...* (DP6)

[143] The indicated examples in the given sentence have been taken from Dixon (2005, p. 203).

[144] The example has been taken from Chafe (1986, p. 268).

[145] For a more deatiled discussion on the polypragmatic status of the verb *seem* and its cross-linguistic cognates see Aijmer (2009) or Usonienė and Šinkūnienė (2013).

the presence of *seem* indicates that the writer is conveying his or her rather tentative epistemic judgment with respect to the propositional content (Vihla, 1999). However, in the sentence:

> b) "*In most synapses, the vesicles are spherical in shape and have a clear content...but in some endings after aldehyde fixation...the vesicles* ***appear*** *flattened."* [146]

there is no indication of the writer's epistemic speculation as the verb is used in a purely perception sense, semantically comparable to the meaning of *look*, thus indicating the evidential reading. Vihla adds that the epistemic reading of *seem* or *appear* is most likely triggered by the semantics of the adjective. As shown in the above examples, the epistemic reading is more likely present when an adjective characterizes something which is based on reasoning rather than on direct evidence. By contrast, the evidential (i.e. perception) reading is more likely when an adjective refers to external, directly observable phenomena.

Despite different approaches to the linguistic status of *seem* verbs, their overall pragmatic functions may have reached consensus in the context of academic writing (Hyland, 1998; Vold, 2006a; Martín-Martín, 2008). As previously noted, though discussed under different labels in the studies on academic discourse, the pragmatics of *seem* and *appear* has been commonly associated with hedging functions, broadly indicating a writer's distance from the categorical assertions (Hyland, 1998). Thus, Vartalla (2001) groups them into the category of tentative linking verbs, associated with reducing the precision and therefore the reliability of the claims. Hyland (1998), on the other hand, discusses the given verbs within a broader class of epistemic-evidential verbs. The epistemic element of this verbal category implies the "subjectivity of the epistemic source" (Hyland, 1998, p. 119), while the evidential refers to the distinctive nature of evidence used as a support of the

[146] The example has been taken from Vihla (1999, p. 30).

claim. In case of *seem* verbs this refers to the writers' senses, the evidence of which is used to support an epistemic qualification.[147] As noted, the status of the verbs *seem* and *appear* as evidential markers performing epistemic functions has been recognized in Vihla's (1999) research on the pragmatics of modality in medical writing. According to Vihla, though at the semantic level the given verbs may be used to refer to sensory, i.e. visual evidence, at the pragmatic level they indicate a degree of the speaker's knowledge, performing the same epistemic function as other, more central epistemic modality markers. Vihla states that being associated with the notion of epistemic likelihood the use of the given verbs allows writers to "present statements as probable without committing themselves to their truth" (p. 91), as exemplified in the following example:

e) *"It **seems** that much of this internal signaling results from activation of molecules…"*
(Vihla, 1999, p. 91)

Prior to the outline of the approach adopted in this study, the attention is shifted to the linguistic status of the Croatian cognate(s) of *seem* verbs.

[147] Judging by the very label of the given category, Hyland (1998) presumes the overlap between the categories of epistemic modality and evidentiality which the author explicitly admits by claiming that "epistemic modality clearly encompasses what has been termed 'evidentiality', concerned with the reliability of knowledge…" (p. 47). Moreover, Hyland adopts Palmer's (1986) categorization of the four ways of expressing non-factuality of the proposition and relates it to the different ways writers hedge their claims. In other words, claims can be presented either as subjective opinions (e.g. *We speculate, I suggest*), conclusions (e.g. *We infer/conclude*), academic 'hearsay' (e.g. *XY speculated/predicted*), and sensory evidence (e.g. *The hypothesis seems plausible*).

9.2 Epistemic-evidential verbs in Croatian

Croatian grammars do not provide much information on the verbs *činiti se* and *izgledati*. Silić and Pranjković (2005) include them in the group of intransitive semi-copular verbs (Cro. *neprijelazni semikopulativni glagoli*) which can be considered as a type of modal verbs. Silić (2008) labels the impersonal constructions with the given verbs as 'phrasal expressions' which function as sentence connectors in scientific texts, along with the expressions, such as *poznato je/jasno je/vidi se*. The author argues that, structurally, the given phrasal expressions comply with the impersonal character of the scientific discourse and are used to signal the writers' doubt, assumption, conviction, etc. with respect to the propositional content. The usage of the given verbs may come as no surprise given the semantics of these verbs. As indicated in Anić's (2003) dictionary,[148] apart from the meanings *pretvarati se* or *doimati se*, *činiti se* is frequently used as a signal of indirectness and accordingly avoidance of assertive statements. This may be attested by the following glosses:

a) *čini se da nemamo vremena (= reklo bi se da nemamo vremena)* or

b) *čini mi se (= rekao bih; imam dojam)*[149]

Along the same lines, the meaning of *izgledati* is associated with the meanings of *doimati se* and *činiti se*. Sesar (1992) classifies the construction *čini mi se* into the group of grammatical particles which include particles such as *mislim, pretpostavljam, vjerujem, gle, hajde,* etc., as exemplified by the following:

c) *Tamo je bio, čini mi se, i njegov rođeni brat.* (p. 255)

[148] Veliki rječnik hrvatskog jezika (Anić, 2003)

[149] The examples were taken from Anić (2003).

According to the author, in semantic terms, these grammatical particles are classified into the class of evaluative particles, associated with the meanings of uncertainty and likelihood and as such represent the constitutive devices of modality of plausibility (cf. Chapter 2).

With respect to the evidential and/or epistemic modal status of the given Croatian semi-copular verbs, Gnjatović and Matasović (2010) treat the use of *činiti se* as a syntactic evidential strategy in two types of constructions: činiti se + *da* complement as in *čini (mi) se + da je X takav* (Engl. 'it seems (to me) that X is...') and in raising-to-subject construction *X mi se čini kakvim* (Engl. 'X seems/appears to be...'). The same applies to the verb *izgledati* though, as the authors claim, it is significantly less frequently used in the complement construction probably due to its more prominent perception meaning.

As far as the research on academic discourse in Croatian is concerned, the given verbs are mentioned in Ćulić-Viskota's (2008) account on evidentiality in Croatian, though not discussed in detail. The author refers to the impersonal form of the verb *činiti se* as an evidential strategy which the writers of research articles use to report on the information but at the same time signal their epistemological stance towards it. Thus, the impersonal construction of the English verb *seem* and its Croatian equivalent *činiti se* in the examples below suggests that the claim has been an inevitable consequence of the research process, which in turn makes it more objective and therefore more plausible than would be suggested by the personal statement *'I think...'/ 'Mislim'*.

d) *It seems reasonable to claim that most innovations in agent design have come ...*

e) *Čini se razumnim tvrditi da je većina inovacija u ...*[150]

[150] Both examples (d, e) were taken from Čulić-Viskota (2008, p.149).

With respect to the verb *činiti se*, though not elaborating it in detail, the author does observe that its use has a mitigating effect on the categorical character of the claim.

Though the present section deals with the linguistic status of the Croatian verb *činiti se* concerning the available Croatian linguistic literature and research, it seems worth pointing briefly to some linguistic accounts of the congruent verb in the typologically related Serbian language. Discussing evidentiality in Serbian and Ukrainian, Popović (2010) argues that the verbs *činiti se, izgledati,* and *vidjeti* in *da-* complement clauses can lose their perceptive meaning and assume the meaning of inferential evidentials. By indicating the logical deduction as a source of information based on the available evidence, the verbs in question acquire the status of non-factive verbs, as shown in the following example:

f) *Čini mi se da se Marta nije obradovala poklonu. (=Primjetio sam/Po mom mišljenju…)*[151]

According to the author, the verb *činiti se* functions as an inferential evidential, primarily indicating that the statement is based on a particular source of information, in this case, the logical deduction. This can be attested by the following gloss: 'Based on the facts available to me I can conclude that a state of affairs has occurred.' Popović (2010) concludes that the use of the given verbs has nothing to do with the evaluation of the truth of the proposition, which renders their non-epistemic status.

The evidential status of the verbs *činiti se* and *izgledati* in Serbian has also been discussed by Trbojević-Milošević (2004). Thus, the evidential meaning of the sentence:

g) *Čini (mi) se da je bila neka silueta na prozoru.*[152]

[151] The example was taken from Popović (2010, p. 31).

[152] The example was taken from Trbojević-Milošević (2004, p.168)

can be glossed as: ‘My senses (i.e. sight, hearing, etc.) lead me to assume that...’ Nevertheless, the author acknowledges that the presence of the verb *činiti se* indicates a non-categorical claim. By using the given verb, a speaker indicates the epistemic distance from the truth of the proposition, which is connected with the awareness that one’s senses may not be absolutely accurate. This recognition, however, does not make *činiti se* and *izgledati* epistemic verbs as they do not question the factivity of the propositions as is the case with the non-factive verbs such as *misliti* or *vjerovati.* According to the author, the given verbs are primarily the evidential markers which may acquire epistemic or hedging overtones in actual language use.

9.3 Towards the approach adopted in this study

With respect to the status of the English verbs *seem/appear* and the Croatian verb *činiti se* in the present analysis, the given verbs are taken to be evidential markers, indicating a writer’s tentative inference based on reasoning. As noted in Chapter 2, inferencing is a type of evidence or a mode of knowing which along with the source of information is considered to be a constituent element of the linguistic category of evidentiality (Čulić-Viskota, 2008). However, as indicated above, in most cases the use of the given verbs does convey an overtone of a subjective uncertainty with respect to the factuality of a state of affairs, which renders the epistemic status of the given verbs. The label epistemic-evidential seems, thus, appropriate as it captures both evidential and epistemic dimensions of the given verbs (Usonienė & Šinkūnienė, 2013). What lies at the heart of the present analysis, however, is their prominent hedging status in research articles, which is primarily centered around the notion of conveying tentative rather than categorical claims.

As will be shown, in some cases the reasons of politeness rather than epistemic evaluations seem to override the use of the given verbs. This is in line with the multifunctional nature of the given verbs, as reported by prior cross-linguistic research (Aijmer, 2009; Usonienė & Šinkūnienė, 2013). At this point it should be noted that in addition to the epistemic uses of the epistemic-evidential verbs, the present analysis also includes the occurrences of the given verbs concerned more with the reasons of politeness, as this use seems to be quite prominent in the present disciplinary writing. In that sense, the approach adopted for the analysis of the epistemic-evidential verbs partly departs from the account of the epistemic modal verbs, as discussed in Chapter 4.

With respect to the structural patterns of *seem* and *appear*, previous research (Biber et al., 1999; Usonienė & Šinkūnienė, 2013) shows that they may appear in a range of different syntactic patterns. As the Engcor data show, *seem* and *appear* can take an adjectival complement (243), a complement *that*-clause (244) and a *to*-infinitive clause (245) (Biber et al., 1999):[153]

243. *Further research on romantic life stories and their links to more traditional models of attachment and intimacy development seems well worthwhile.* (DP6)

244. *From these findings, it appears that while perceptions of parenting at age 17 predict what kind of romantic relationship story individuals choose to tell almost 10 years later, this effect may be largely dependent on individuals' general attachment styles (see Table 5).* (DP6)

245. *They seem to be nervous or afraid to be around other kids and they don't talk much.* (DP3)

[153] Biber et al. (1999, p. 705) classify *seem* and *appear* into the group of "verbs of probability and of simple fact" when controlling the constructions with subject-to-subject raising, as in (245). Verbs of probability signal that the propositional content of a *to*-clause has some degree of probability or likelihood.

In addition, the Engcor data also show a parenthetical use of *seem* verbs, as shown in (246) below. The evidential-epistemic reading of this use of the given verbs seems to be nicely captured by Biber et al. (1999, p. 865), arguing that the use of comment clauses, such as *it seems* or *it appears* alludes "to some evidence supporting the proposition, although at the same time they introduce a certain level of doubt." Admittedly, the occurrences such as (246) were rather infrequent, most likely because a commentary overtone of this pattern seems to be unsuitable for the formality of academic discourse.

246. *Rather than ignore a redundant piece of information (as occurs when either advice or nonsocial cues are encountered alone), it appears, people continue to attend to such information when it comes from a new kind of source.* (JPSP1)

With respect to the syntactic patterns of the Croatian verb *činiti se*, the Crocor findings show that it mostly occurs as an antecedent of a *da*-complement clause (247). In addition, it may co-occur with an adjective in instrumental case + infinitive (248), as shown below:

247. *Čini se da je za doživljavanje pozitivnih ispitnih emocija, važnije na koji način učenici samoreguliraju svoje emocije i motivaciju prilikom učenja, od same činjenice da to uopće čine.* (SP2)

248. *Stoga se čini vrijednim provjeriti dimenzionalnost konstrukta pravednosti uvažavajući i različite izvore pravednosti.* (PT2)

Though rarely, the Crocor data also show that the given verb may appear in the parenthetical use, as in (249):

249. *Ističe se nalaz da u uvjetima etničke podijeljenosti varijable identiteta i kod većine i kod manjine snažno oblikuju integracijske stavove i da one, čini se, s vremenom postaju sve važnije, premda je plauzibilno očekivati da protok vremena smanjuje etničke napetosti i u prvi plan stavlja neke druge elemente socijalne dinamike zajednice.* (DI2)

The section that follows outlines and discusses the findings concerning the use of *seem* and *appear* in the English sub-corpus.

9.4 Overall findings of the epistemic-evidential verbs in Engcor

With respect to the distribution of the verbs *seem* and *appear* in Engcor, the overall results point to almost identical frequency of the two verbs, with *seem* showing 0, 310 occurrences, and *appear* 0, 315 occurrences per 1000 words (Table A8, Appendix 12). As can be seen in Figure 13, their overall distribution across the IMRAD structure was also very similar. Thus, the highest frequency of the verbs was recorded in the Discussion section, with *appear* being used slightly more frequently (n/1000 = 0, 80) than *seem* (n/1000 = 0, 72). In the Introduction section, their frequency was significantly lower, whereby *seem* showed a bit higher frequency (n/1000 = 0, 32) as compared to *appear* (n/1000 = 0, 26). The frequency of the given verbs was considerably lower in the remaining sections, with the Results section showing 0, 26 occurrences and the Method section only 0, 05 occurrences of both verbs per 1000 words (Table A8, Appendix 12). The almost identical distribution of the frequencies of the two verbs suggests that Engcor writers alternate in their use, which presumably points to their shared pragmatic functions, as the following example nicely illustrates:

> 250. *Anger appears to be evoked by appraisals of self-relevance, disgust seems to be related most strongly to appraisals that a person is morally untrustworthy, and contempt seems uniquely related to the judgment that someone is incompetent or unintelligent.* (JPSP4)

This seems to run against the LSWE Corpus findings which report on the predominant use of *seem* in academic prose, particularly taking the adjectival complement or *to*-infinitive clause (Biber et al., 1999). Apparently, in the disciplinary writing examined here, both verbs

seem to be equally salient in conveying the writers' stance. For this reason, the subsequent discussion outlines the use of the two verbs jointly.

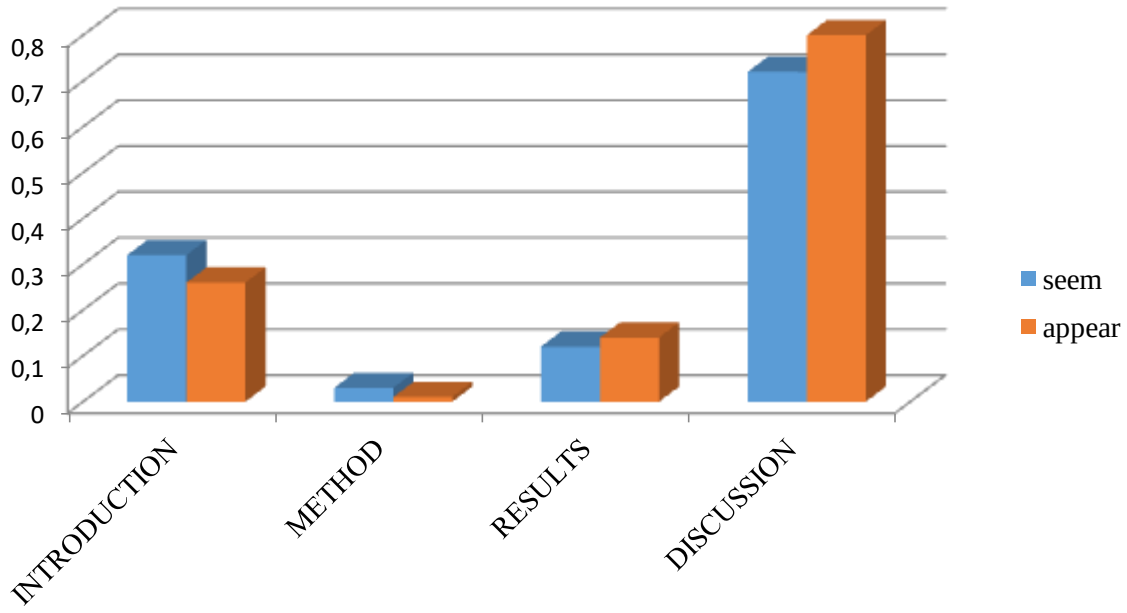

Figure 13. Distribution of the epistemic-evidential verbs across IMRAD in Engcor

In the Introduction section, the use of the given verbs mainly concerns intersubjective evaluations, referring to the assumptions shared by the members of the given discourse community, including the writers themselves. The intersubjective readings are most overtly signaled by the non-integral citation forms, as shown in:

> 251. *The EGPS items appear to reflect cognitive components of self-concept at a general level (Burns, 1979), and may also reflect notions of self-determinism (Ryan & Deci, 2001), personal resourcefulness, positivity and mindfulness (Seligman, 2003).* (PID1)

> 252. *The Pe may reflect conscious evaluation of an error (Falkenstein et al., 1991, 2000; Nieuwenhuis, Ridderink-hof, Blom, Band, & Kok, 2001; Vidal, Hasbroucq, Grapperon, & Bonnet, 2000) and seems to be functionally distinct from the ERN (e.g., Bartholow et al., 2005; Murphy, Richard, Masaki and Sega-lowitz, 2006; Vidal et al., 2000).* (DP8)

However, the Engcor findings also point to the subjective uses of the given verbs, particularly concerning the use of the verb *seem*. For example, in sentence (253), despite the use of an impersonal construction, a writer is clearly conveying a personal epistemic judgment, which is further signaled by the contextual clues, in particular the presence of the personal pronouns *our* and *we* in the next two sentences.

> 253. *For a variety of related reasons, then, it seems plausible that political ideology would affect social categorization processes, especially under circumstances of perceptual ambiguity. To our knowledge, no prior work has investigated the effects of political ideology on categorization of sexual orientation under ambiguity (i.e., "gaydar"). We theorized that because of differences in cognitive and motivational style, conservatives would be more likely than liberals to (a) use gendered cues in making judgments of sexual orientation...*(JPSP9)

The subjective readings of the epistemic evaluations such as (253) are often encountered in the Moves commonly labeled as 'Establishing' and 'Occupying the niche' (Swales, 1990), in which writers point to the gaps of the previous research and announce how their research will address it (cf. Chapter 2).

In announcing their research writers may use the given verbs to hedge their personal opinions and thus avoid imposing them on the discourse participants (Myers, 1989). Thus, in example (254), writers are probably convinced of the importance of the research, yet the use of the verb *seem* mitigates the assertiveness of the claim, signaling thus a writer's polite attitude to the readers (Myers, 1989).

> 254. *Importantly, conscientiousness is associated with better reported sleep quality (Gray & Watson, 2002). Thus, it seems important to understand the independent and interactive effects of neuroticism and conscientiousness in examining vulnerability to stress-related sleep disturbance.* (PID10)

As the findings show, the use of *seem* and *appear* in the middle RA sections is rather scarce which is expected given the rhetorical functions of these sections. As previously discussed, in the Results section writers primarily focus on the data analysis, statistical procedures, etc. (APA, 2010), which accounts for the general low frequency of the epistemic markers. The occurrences of *seem* and *appear* in the Results section in Engcor may be accounted for by the fact that some writers find it necessary to interpret their research findings immediately as they present them, i.e. prior to the general discussion of the overall findings, as in:

> 255. *These analyses suggested that narrative theme was linked to attachment styles as expected. Furthermore, the patterns that emerged in terms of means in these sets of analyses indicated that break-up and independence stories were generally distinctive from the true love and relationship-building stories in several ways. Indeed, true love and relationship-building stories together seemed to form the dominant pattern in this sample (>70% of all stories).* (DP6)

As the Engcor findings show, the use of *seem* and *appear* is most salient in the Discussion section, in which, as previously discussed, a writer's critical thinking is most prominent. The use of the given verbs is commonly associated with writers' tentative inferences with respect to the results of their research, as shown in:

> 256. *From these findings, it appears that while perceptions of parenting at age 17 predict what kind of romantic relationship story individuals choose to tell almost 10 years later, this effect may be largely dependent on individuals' general attachment styles (see Table 5).* (DP6)

Congruent to the use of other epistemic devices, the given verbs appear strategically at the places where writers engage in accounting for the possible reasons underlying the specifics of their research findings. This may be nicely illustrated in the following passage which opens with the reference to the obtained results (... *were both significantly associated*

with...), but once the writer starts interpreting the results, a hedge immediately emerges, signaling his or her lack of full commitment to the proposed claim.

> 257. *Consistent with previous studies, traits and values were both significantly associated with SWB and also with one another. However, associations between values and SWB appear to be due to the variance both share with traits.* (PID6)

The use of the given verbs may be related to the previously discussed writer-oriented hedges (Hyland, 1998), which are primarily used to withhold a writer's commitment to the claims, diminishing thus a personal responsibility for them.

When taking an extraposed *that*-clause, *seem* frequently co-occurs with the adjectives *likely* and *reasonable*. A high frequency of these co-occurrences was also reported by the LSWE Corpus findings, particularly with respect to the adjective *likely*.[154] The following examples may serve to illustrate the point:

> 258. *Although we found no evidence that perceivers' levels of prejudice contributed to the use of gender inversion stereotypes, it seems likely that prejudice would play a role in downstream judgmental processes that occur once a given individual has been categorized as gay. (*JPSP 9)

> 259. *It seems reasonable that such predictors of resilience could also be associated with mastery and toughness, and-in turn-low but nonzero levels of lifetime adversity.* (JPSP 8)

In the harmonic combinations of this type, the use of *seem* may be interpreted as increasing the tentativeness of a writer's claim, which is already implied by the presence of the predicatively used epistemic adjective *likely*. If we add to it the impersonal syntactic pattern in which the agent is backgrounded, we may argue that the compound hedges of this type serve to foreground a writer's hedged stance towards the propositional content.

[154] According to Biber et al. (1999), with respect to the given pattern, *appear* does not co-occur with the adjectives as frequently as *seem*.

While in the above-cited examples (253-258) the epistemic stance is implicitly attributed to the writers, the subjectivity of the claim may be overtly conveyed by the presence of the evaluators themselves, i.e. the writers, as shown in the following example:

> 260. *Prior to there being a concern over copyrighting of item content, it appears to us to be intelligent to use those markers of traits that, on objective and subjective criteria, might be relatively good. Better that, perhaps, than a constant reinventing of the marker items each time a trait had to be studied. This may be an interesting and fruitful field for others to explore.* (PID3)

Writers are clearly engaging in recommendations concerning future research, so their explicit intrusion in the text (i.e. *to us*) as well as the choice of the verb *appear* reduces the strength of the claim, which might be found too intrusive by the readers if conveyed in a more assertive tone (cf. *it is intelligent to use those markers*…). However, in the whole Engcor there was only one occurrence with the explicit personal attribution, which suggests that impersonal constructions with *seem/appear* verbs are the dominant means of expressing (inter)subjective epistemic qualifications in the present sub-corpus.

The impersonality of the academic writing style may be expressed in different ways and the impersonal construction with *seem/appear* verbs + *that-/to-* complement clauses is one of the means how writers make their presence invisible (Hyland, 1998). Another means of achieving a similar effect is the use of the *seem + to infinitive* construction with the raised subject referring to inanimate entities. Hyland (1998) uses the term 'abstract rhetors' to refer to the constructions in which an inanimate subject (e.g. *evidence, data*) is assigned an agentive role. In simplified terms, instead of writing something like *'Based on my interpretation of the results I think that the following is the case…',* writers may avoid direct personal commitment to their claims by resorting to the impersonalized constructions of a type *'Results suggest/ indicate that…'*. In that way, a personal responsibility for the claim is diminished, as it is implicitly shifted onto an agentless source (Hyland, 1996b). In Hyland's

(1998) polypragmatic account of hedges, the given structure is typically associated with writer-oriented hedges which, as discussed earlier, subsume various linguistic means concerned with signaling avoidance of the writers' visibility in the text. The following examples may serve to illustrate the point:

> 261. *Scattered evidence seems to suggest differences in cognitive processes between situations in which a single type of information is encountered and situations in which multiple types of sources are available...* (JPSP 1)
>
> 262. *While the data only address the association between adolescence and young adulthood, these findings seem to lend support to the notion that child-caregiver models may carry through into adult attachment systems (Bowlby, 1979; Main, 1995; Roisman et al., 2005).* (DP6)

It might be argued that in both examples the presence of *seem* indicates a writer's even further distance from taking full responsibility for the claim than would be suggested by the use of *suggest* or *lend support* only.

According to Biber et al. (1999), the use of inanimate subjects in subject positions accompanied by verbs of various semantic domains is a typical feature of academic prose. In particular, the LSWE findings show that 10% of all mental verbs and 20% of the communication verbs (e.g. *suggest*) used in academic prose take inanimate subjects.[155] The authors go on to suggest that a high frequency of inanimate subjects in academic prose seems to be justified by the fact that the latter is more oriented to establishing the relational affairs among the inanimate entities rather than focusing on human agents as doers of the actions. This observation seems to be captured in one of my informants' comments related to the writers' explicit presence in the text:

[155] According to the LSWE Corpus findings, among the communication verbs, the verb *suggest* occurs most frequently with inanimate subjects, while in the semantic class of mental verbs, *mean* and *prove* are the most frequent verbs taking inanimate subjects.

> "In my opinion the focus should be on the subject matter, ideas, evidence supporting or disputing particular assumptions – I think all that should be in the foreground and not a writer." (Interviewee 1)

Dorgeloh and Wanner (2009) claim that the *inanimate subject + communication verb* (e.g. *suggest, argue*) is an important instance of academic formulaic language which seems to comply well with the general tendency of academic discourse being more object- rather than author-oriented, which is nicely shown in the following example:

> 263. *The recent model of working memory proposed by Barrouillet et al. (2004) appears to be able to account for most, though not all, of the results of the present study*. (DP2)

As the authors observe, in pragmatic terms, the impersonal *inanimate subject + reporting verb* construction refers to making an act of argumentation more visible as opposed to the passive voice with its hidden agency and possible ambiguity. In other words, by having an inanimate entity (e.g. *finding, paper*) perform an act of evaluating, arguing, etc., the active voice is still retained, which might account for the preference of this construction over the passive voice. At the same time, the whole pattern creates an impression that the facts, results, etc. speak for themselves, without the intervention of a human agent, which seems to conform to the generally abstract character of the academic register (Biber, 1988; Dorgeloh & Wanner, 2009).

The interpretation of the given constructions might be further illuminated from the perspective of cognitive linguistics, in particular in light of conceptual metonymy (Low, 1999; Šeškauskienė, 2009). Though a fuller discussion on this topic is beyond the scope of the present study, it suffices to note that the given examples might be interpreted as instances of PRODUCT FOR PRODUCER or RESULT FOR ACTOR metonymies (Low, 1999), whereby the non-human agents *research/evidence* are vehicle entities standing for

human target entities *researchers* or *authors*. On a more general note, the function of such and similar metonymies in academic writing may be regarded as a rather convenient or "the most economical way to refer to" the authors or their research and comment on them (Panther & Thornburg, 2007, p. 250). As Herrmann (2013) argues, by summing up or condensing information, the given structures may function as cover terms for the references which are either too wordy to integrate in the sentence subject position or are unnecessary to specify. Indeed, it would be hard to imagine a situation in which writers could only refer to other people's work by using human subjects, which, if always used in subject positions, would seriously affect the flow of the text.

To sum up, the preceding discussion has shown that the verbs *seem* and *appear* offer a range of opportunities to convey a subjective or intersubjective epistemic stance, being thus the constituent elements of evaluative language use in academic writing. The Engcor findings have shown that the uses of the given verbs may be tied to different rhetorical functions. In other words, apart from conveying a hedged stance with respect to both subjective and intersubjective epistemic evaluations, in some cases their use is predominantly associated with the purposes of politeness. The section that follows focuses on the outline of the Crocor findings with respect to the use of the verb *činiti se*.

9.5 Overall findings of the epistemic-evidential verbs in Crocor

As the Crocor findings showed only one occurrence of the epistemic use of *izgledati*, the present section outlines and discusses only the distribution of *činiti se* across IMRAD in Crocor. The overall raw and normalized frequencies of the epistemic-evidential verbs used in Crocor can be found in Table B7 in Appendix 12. As can be seen in Figure 14, the highest frequency of the verb was recorded in the Discussion (n/1000 = 0, 62), followed by the

Introduction (n/1000 = 0, 23), while its use was rather infrequent in the Results (n/1000 = 0, 10) and Method section (n/1000 = 0, 04).

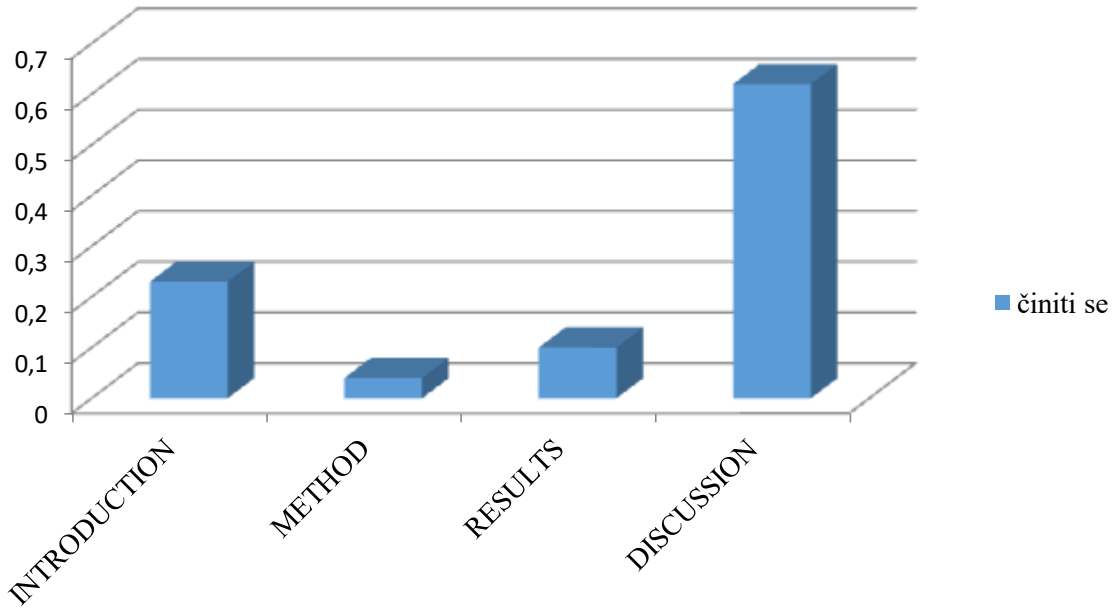

Figure 14. Distribution of *činiti se* across IMRAD in Crocor

With respect to the single occurrence of the epistemic reading of *izgledati*, the use of the given verb controlling *da*-complement clause corresponds to the congruent use of *činiti se* (i.e. *čini se da*), as shown in example (264).

> 264. *Unatoč tome, izgleda da su djevojke osobito osjetljive na zaključke o stabilnosti, dok je u mladića intenalnost uzroka ključna.* (PT6)

The writer is clearly conveying an epistemic evaluation of the propositional content, indicating his or her lack of full commitment to it. Nevertheless, it seems that the use of the given verbs suggests the writer's fairly high degree of certainty in the truth of the state of affairs, as compared to e.g. *moguće je da*. In the case of the former, it is presumably related to the strength of evidence the writer uses to base her evaluation on. In any case, a single occurrence of *izgleda da* in 30 articles comprising the current Croatian sub-corpus clearly

points that the use of the given pattern is not a part of evaluative language use in the disciplinary writing examined here. It may be argued that its less frequent use in the present sub-corpus reflects the overall lower frequency of *izgleda da* as compared to *čini se da* in the general use of the standard Croatian (Gnjatović & Matasović, 2010). As the authors observe, this is probably due to the prominent perception meaning of *izgledati*, which is both semantically and etymologically related to the perception verb *gledati* (Eng. *watch, look, see*). According to the authors, the use of *izgledati* is more connected to the evidential meanings, in particular with respect to visually-based experiences, rather than epistemic. This, in turn, makes it a less suitable candidate for hedging purposes, as attested by the present findings. In addition, it might be argued that *izgleda da* is perceived as a less formal alternative to *čini se da*, which might further account for its less frequent use in the disciplinary writing examined here. In an informal conversation, a Croatian psychologist who is a prolific publisher of research articles in psychology commented the following:

> "I do not use *izgleda da* in my writing as it does not sound academic. However, the English cognate *it appears that* is perfectly acceptable." (G. V.)

Be that as it may, it would be interesting to compare the observed frequency of *izgleda da* in Crocor with the data from a larger corpus comprising the writings in different disciplines so as to rule out the possibility of the disciplinary-specific tendencies and draw some more general conclusions regarding its status in academic writing in Croatian.

With respect to the use of *činiti se*, the Crocor findings show that it is prevalently used in *da*- complement clause construction. This seems to be a favored pattern by the Croatian psychology writers, as it allows conveying caution in their epistemic judgments or those shared by disciplinary members, while at the same time remaining in the background as their sources. As expected, in the Introduction section the use of the given verb is mostly

associated with the intersubjective evaluations, which point to the shared status of knowledge (Aijmer, 2009), as shown in the following example:

> 265. *Čini se da je emocionalna podrška važnija ženama nego muškarcima te da su kod žena socijalna podrška i zdravlje u većoj mjeri povezani (Schwarzer i Leppin, 51 1989.).* (DI7)

In the Discussion section, its use is mostly tied to the writers' subjective evaluations, mainly concerned with expressing tentativeness in drawing inferences with respect to the research findings. Thus, in the following sentence:

> 266. *Iako postoji problem u određivanju uzročno-posljedičnih veza ispitne anksioznosti i uspjeha, čini se da ispitna anksioznost otežava postizanje uspjeha.* (PT3)

the highlighted expression indicates that though the writer has relatively sufficient grounds to put forward the claim, the use of *čini se* marks a distance from the categorical statement (cf. *ispitna anksioznost otežava postizanje uspjeha)*.

The subjective readings of *činiti se* are most clearly associated with its co-occurrence with the adjectives in instrumental case, as demonstrated in the following example:

> 267. *Stoga se čini vrijednim provjeriti dimenzionalnost konstrukta pravednosti uvažavajući i različite izvore pravednosti.* (PT2)

It may be argued that in such occurrences the given verb performs the identical hedging functions as the previously discussed English verbs *seem* and *appear*. In other words, *činiti se* seems to be primarily used to mitigate assertiveness of the claims which might be otherwise regarded as too bold or overstated. Thus, it is commonly used in the contexts where writers feel the need to justify their decisions with respect to different aspects of their research or methodological steps undertaken in the course of the study. This might be best attested by the choice of the adjectives co-occuring with *činiti se*, as exemplified by the

following constructions extracted from Crocor: *čini se vrijednim/opravdanim/korisnim*, etc. Congruent to their English cognates, such constructions are often encountered in the Introduction section, in particular in the segments concerned with the move labeled as 'Occupying the niche' (Swales, 1990). While positioning their own research, writers use polite language so as to avoid overstating its importance, leaving it to the readers to judge the value of the research for themselves. As previously discussed, avoidance of direct or bold statements with respect to the significance of one's research might be regarded as an act of demonstrating academic modesty and humility, which in the light of politeness theory is considered to be one of the conventionalized features of academic writing (Myers, 1989). Being a humble servant to the discipline essentially means abiding by the conventionalized disciplinary norms which require demonstration of familiarity with the rhetorical conventions and social interactions of academic discourse (Myers, 1989; Hyland, 2001).

Unlike its English cognates, the multiple hedges with *činiti se* are notoriously rare in Crocor. More specifically, there was only one occurrence in the whole sub-corpus, in which *činiti se* co-occurred with the probability adjective *vjerojatan*, as demonstrated in the following example:

> 268. *Isto tako, čini se vjerojatnim da će pojedinac s usvojenim ciljem izvedbe putem uključivanja koristiti i efikasnije strategije učenja, ako ga to može dovesti do željenog postignuća.* (SP3)

It may be reasonably assumed that the given construction is the direct translation of the English double hedge '*it seems likely that'*. However, a low infrequency of such constructions suggests that the double hedges of this kind have not been entrenched as the conventionalized hedging devices in Crocor.

The parenthetical use of *činiti se* might be regarded as a text comment which also signals that writers do not wish to be absolutely committed to the proposed claims. For

example, in sentence (269) below, though the choice of the reporting verb *pokazati* leaves no doubts on the certainty of the claim, writers still feel the need to insert a tentative comment *čini se*, suggesting unwillingness to endorse the full force of the categorical statement. This seems to be further reinforced by the use of the adverb *vjerojatno* in the next sentence. Congruent to the equivalent uses of *seem* and *appear*, such occurrences of *činiti se* are extremely rare in Crocor.

> 269. *Recentna metaanalitička studija Raabea i Beelmanna (2011.) pokazuje da, čini se, u međugrupnim stavovima nema sustavnih razlika u razdoblju adolescencije, što je dobni uzorak i u našem istraživanju. Stoga je vjerojatno da je riječ o specifičnim povezanostima ove varijable s drugim prediktorima u manjinskom uzorku, barem kada je riječ o stavu prema školskoj integraciji.* (DI2)

To sum up, the verb *činiti se* represents yet another means research article writers have at their disposal to convey stance towards the propositional content of their claims. As has been shown, *činiti se* may be used to express subjective epistemic judgments or to refer to those shared by members of the given disciplinary community. Congruent to the English cognates, in addition to its prominent function of conveying tentativeness in epistemic judgments, in some cases the use of *činiti se* may be primarily associated with reasons of politeness, which points to its multifunctionality in language use (Usonienė & Šinkūnienė, 2013).

9.6 Comparison of the Engcor and Crocor findings

The final section in this chapter focuses on the comparative findings with respect to the use of the epistemic-evidential verbs in Engcor and Crocor. The core difference in the use of the given verbal category between the two sub-corpora is that Engcor writers dispose of the two verbs in conveying their hedged stance, while Crocor writers use only one. In order to relate the frequency of *činiti se* with those of *seem* and *appear* across the IMRAD structure, Figure 15 outlines the distribution of the individual verbs in the two sub-corpora.

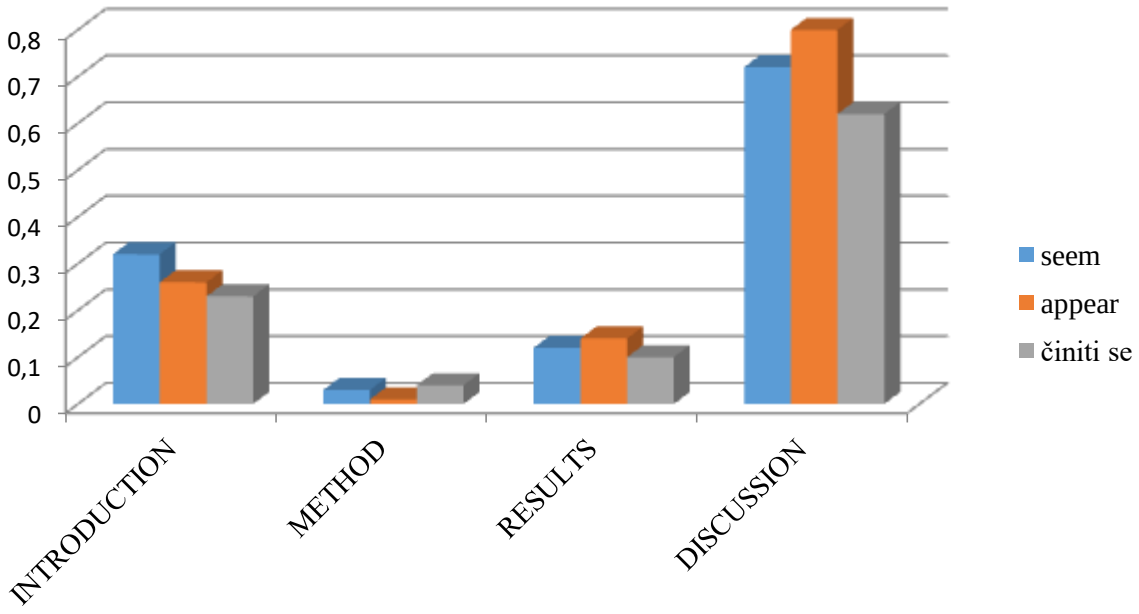

Figure 15. Distribution of the epistemic-evidential verbs across IMRAD in Engcor and Crocor

As can be seen, at the individual level, the distribution of the given verbs shows striking similarities across IMRAD, with the highest density of the occurrences recorded in the Discussion section in both sub-corpora. The given verbs were used significantly less frequently in the Introduction section, while in the remaining two sections their distribution was rather low, especially concerning the Method section. The overall findings suggest that both Engcor and Crocor writers used the given verbs in the sections in which conveying

hedged stance is most at stake, most notably in the Discussion, whereby *appear* showed 0, 80 of occurrences, *seem* 0, 72 and *činiti se* 0, 62 per 1000 words.

Generally, it may be argued that the distribution of the given verbs does not show any significant discrepancies in the frequency of occurrences. However, considering that the English verbs *seem* and *appear* and the Croatian verbs *činiti se* and *izgledati* can be used to perform the congruent rhetorical functions in the disciplinary writing under study, when the frequencies of the two verb groups are combined the overall distribution looks significantly different. As can be seen in Table A8 (Appendix 12) and Table B7 (Appendix 12), while there are no striking differences in the frequencies of the given verbs in the Method section, the overall findings point to a relatively higher frequency of the occurrences of *seem* verbs in the Results sections as compared to *činiti se* (*seem* + *appear* = 0, 26; *činiti se* = 0, 10). However, the discrepancy in the overall findings is much more noticeable in the Introduction (*seem* + *appear* = 0, 59; *činiti se* = 0, 23), and especially in the Discussion sections (*seem* + *appear* = 1, 52; *činiti se* + *izgledati* = 0, 64). Though it is difficult to explicitly account for the discrepancies in the findings, the obtained results might suggest that considering the use of the given verbs, English writers seem to be engaged more in conveying hedged stance towards their claims or those shared by the disciplinary community, as compared to their Croatian peers. However, this assumption will be elaborated more fully in the General discussion focused on the overall findings obtained in the present study.

10. General discussion

The overall objective of the present section is to integrate and discuss the results obtained for each separate category of the epistemic devices analyzed in both Engcor and Crocor. This is followed by a comparison of the findings from both corpora with the aim of establishing the patterns of similarities and differences in the overall distribution of the devices under study. A broad reference is made to some previous cross-cultural empirical studies which aimed to account for the way specific cultural characteristics shape the rhetorical practices in cross-cultural academic writing, particularly with respect to the Anglo-American academic writing style.

10.1 Overall findings of the epistemic devices in Engcor

The frequency analysis of the English sub-corpus included 27 epistemic markers in total divided into five lexico-grammatical categories. The most frequent device used in the present corpus was the modal verb ***may***, showing **2, 28** occurrences per 1000 words, while the least employed device was the epistemic adverb ***conceivably*****,** showing **0, 004** occurrences per 1000 words (cf. Table A9, Appendix 12).

The overall results of the frequency analysis show that Engcor writers used **5, 72** epistemic devices per 1000 words (**n= 1363**). Figure 16 presents the breakdown of the normalized frequencies of the epistemic devices[156] with respect to the lexico-grammatical categories examined in the English corpus. As can be seen, the results point to the overwhelming frequency of the modal verbs as compared to all other categories of the epistemic devices under study. The discrepancy in the results of other categories is nowhere

[156] For the sake of convenience, the collective term *epistemic* is used here despite the epistemic-evidential category of verbs included in the analysis.

near as striking. Epistemic verbs are the second most frequent category of epistemic devices, followed by the epistemic-evidential verbs. The overall frequency of the epistemic adjectives is relatively near the overall frequencies of the verbal categories, while the frequency of the epistemic adverbs is nearer to the least frequently employed category of the epistemic nouns.

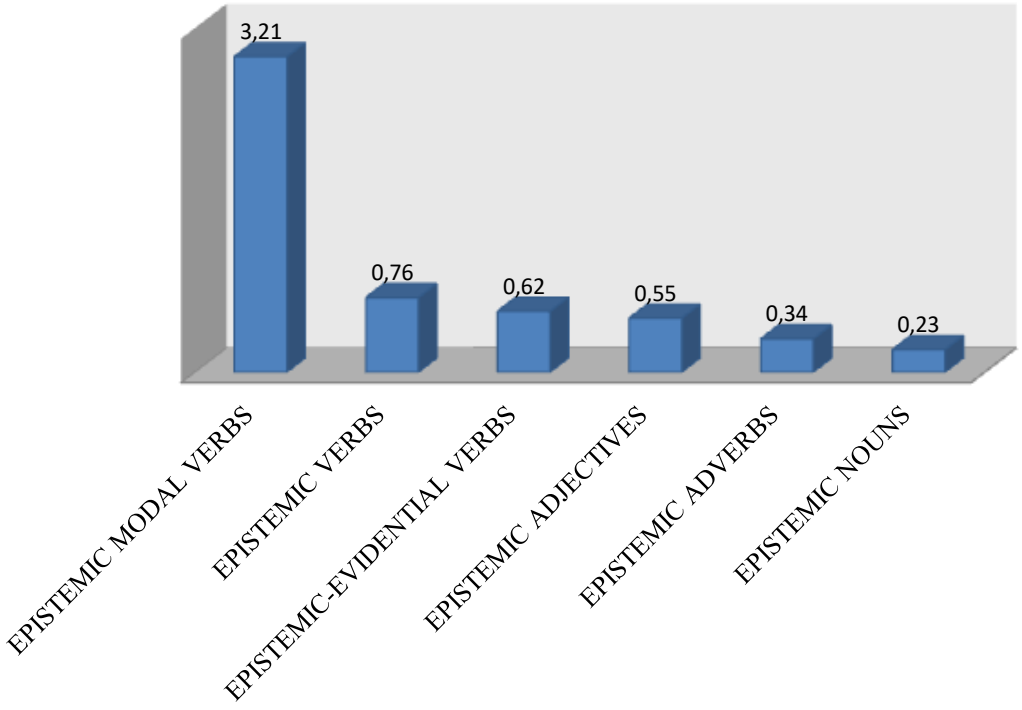

Figure 16. Distribution of the grammatical categories of the epistemic devices in Engcor

As previously outlined, as I am not aware of a single empirical study in English comparable to the present one in terms of the same discipline examined as well as the taxonomy of the epistemic devices used in analysis, it is impossible to directly compare the present results with the results of any congruent study. Nevertheless, in order to illustrate the tendencies in the distributional patterns of the hedging devices (including epistemic markers) in cross-disciplinary writing, a reference is made to the overall findings of the selected empirical research in which the congruent grammatical categories were used.

It should be noted that the studies cited here do not match either in corpus sizes or in the devices comprising the individual lexico-grammatical categories, so the account that follows is of illustrative nature only. Thus, the highest frequency of the modal verbs was recorded in Vold's (2006b) and Šinkūnienė's (2011) research on the use of the hedges in RAs in medicine and in Koutsantoni's (2006) study on hedges in research articles in electronic and electrical engineering. By contrast, the highest frequency of the lexical verbs was recorded in Hyland's (1998) research on the hedging strategies in research articles in molecular biology, Vartalla's (2001) study on the use of hedges in RAs in economics and medicine, as well as in Šinkūnienė's (2011) and Vold's (2006b) research concerning their use in RAs in linguistics. Previous research (Hyland, 1998; Vold, 2006b; Šinkūnienė, 2011) has found that the frequencies of adverbs and adjectives are generally lower compared to the lexical verbs, while the nouns tend to show the lowest frequencies of use as compared to other epistemic devices (Hyland, 1998; Vartalla, 2001; Koutsantoni, 2006).

In broad strokes, the present findings seem to follow some general tendencies in the use of the core lexico-grammatical categories of the epistemic devices in cross-disciplinary academic writing in English. The section that follows outlines the overall findings with respect to the use of epistemic markers in the Croatian sub-corpus.

10.2 Overall findings of the epistemic devices in Crocor

The frequency analysis of the Croatian corpus included 16 epistemic markers in total divided into five lexico-grammatical categories. The most frequent device used in the present corpus was the indicative form of the modal verb **moći**, pointing to **0, 72** occurrences per 1000 words, while the two least employed devices were the adverb **plauzibilno** and the epistemic-evidential verb **izgledati**, pointing to **0, 006** occurrences per

1000 words (Table B8, Appendix 12). The overall results of the frequency analysis show that the Crocor writers used **4, 21** epistemic devices per 1000 words (**n = 603**). Figure 17 outlines the normalized frequencies of the epistemic devices in the grammatical categories examined in the Croatian sub-corpus.

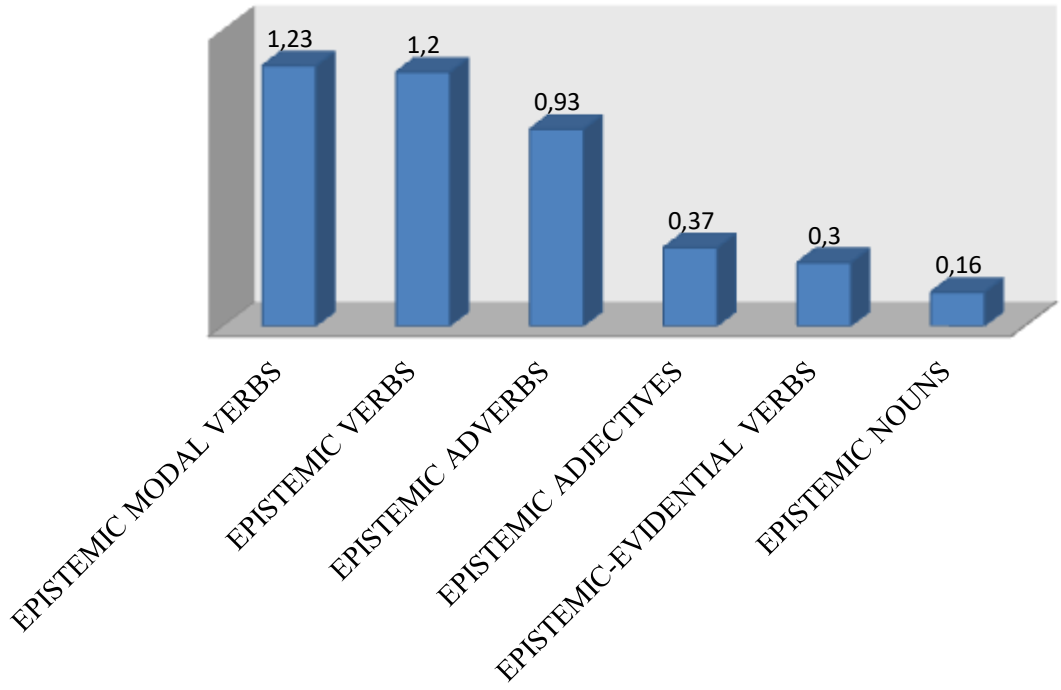

Figure 17. Distribution of the grammatical categories of the epistemic devices in Crocor

As can be seen in Figure 17, though the frequency of the modal verbs ranks the highest, the frequency of the epistemic verbs is quite close to the overall frequency of the modals. The next category in the order of frequency concerns the epistemic adverbs and particles, the frequencies of which are combined here for the sake of convenience. The distribution of the remaining categories of the epistemic devices in Crocor is significantly lower by comparison, pointing to very similar frequencies of the use of epistemic adjectives and epistemic-evidential verbs, and a quite low frequency of the epistemic nouns.

Overall, the findings show a quite polarized distribution of the use of epistemic devices in the Croatian sub-corpus. Thus, the highest frequency is clustered around the three categories, viz. epistemic modal verbs, lexical verbs and adverbs/particles which share relatively similar frequencies, particularly the first two. The other end of the pole concerns the use of the epistemic adjectives, epistemic-evidential verbs and the nouns, whose overall frequencies are considerably lower as compared to the former group of epistemic devices.

In sum, the overall findings indicate that Croatian psychology writers in the present study preferred to use a particular set of linguistic means when conveying epistemic stance, while the use of other devices was significantly less salient by comparison. As previously mentioned, due to the lack of comparable empirical studies in Croatian, it is not possible to claim to what extent the present findings reflect the characteristic features of the disciplinary writing or academic writing in Croatian generally.

10.3 Comparison of the overall Engcor and Crocor findings

As can be seen, the overall number of epistemic devices used in Engcor and Crocor varies. In particular, the frequency analysis of Engcor included 27 devices in total, while the corresponding analysis in Crocor included 16 devices. In addition, the number of epistemic devices comprising the separate grammatical categories was higher in all Engcor categories, except in the categories of the epistemic nouns and epistemic-evidential verbs which comprised the same number of devices as their congruent Croatian categories.

The comparison of the overall Engcor and Crocor findings shows that English psychology writers used epistemic devices more frequently (**n/1000 = 5, 72**) than the Croatian writers (**n/1000 = 4, 21**). The general distribution of the grammatical categories of the epistemic markers in the two sub-corpora showed both similarities and differences. With

respect to the former, in both the English and Croatian corpora the modal verbs were the most frequently employed devices, which was also reflected in the congruency of the most frequent individual epistemic devices in the respective sub-corpora, viz. *may* and *moći*. Likewise, the second most frequent category in both Engcor and Crocor referred to the epistemic verbs. Furthermore, the epistemic nouns were the lowest frequent category in both Engcor and Crocor. The remaining categories of the epistemic devices showed different patterns of distribution. When combined,[157] the use of the epistemic adverbs and adjectives showed a higher frequency in Crocor than in Engcor, while the frequency of the epistemic-evidential verbs was higher in the English as compared to the Croatian sub-corpus.

The overall findings point to the distinctive distributional patterns of the use of epistemic devices across the two sub-corpora. Thus, the Engcor results showed a predominance of a single category of the epistemic devices, viz. modal verbs, while the distribution of the remaining categories did not point to any striking fluctuations. By contrast, the overall frequencies of epistemic devices in Crocor did not point to the centrality of a single grammatical category. As discussed earlier, the highest density was clustered around two or rather three categories, while the frequency of the remaining was significantly lower by comparison.

In a general account of the present findings a reference is made to the overall distributional patterns of the major stance markers in academic prose in English (Biber et al., 1999) and in the written university register (Biber, 2006a), which point to the highest frequency of the modal verbs, followed by complement clauses, while the frequency of the adverbials is considerably lower as compared with the first two. According to Biber et al.

[157] The combined frequencies are presented here due to the incogruency of the two categories in Engcor and Crocor.

(1999, p. 981), the centrality of modal verbs in academic prose can be contributed to the fact that the modals represent "probably the least informative" category of stance devices, in that they do not directly disclose the source of the stance, which plays a significant role in the type of discourse such as academic. Impersonalisation of subjective judgments is particularly at stake in academic discourse, as it is considered to contribute to the scientific objectivity lying at the core of scientific endeavor (Hyland, 2001; Vold, 2006b). Given the results obtained in the present study, this seems to be equally salient in Engcor and Crocor concerning the fact that both the English and Croatian modal verbs show the highest frequencies of use in the respective sub-corpora. However, the saliency of the modal verbs in the present study is particularly emphasized with respect to the English sub-corpus, in which their overall frequency overrides the combined frequencies of all remaining categories examined.

The centrality of the use of modal verbs in academic discourse can be further supported by the corpus-based diachronic studies of the British and American varieties of English language, which point to the overall decline in the use of the modals in general English from the 1960s to the 1990s, with the exception of academic writing which even shows a slight increase in the use of modal verbs (Leech et al., 2009). In accounting for the given finding, Leech et al. maintain that academic writing adheres to its well-established conventions or habitual standards, one of which is avoidance of the categorical statements. In other words, qualifications of the statements "through modal concepts such as 'possibility', 'necessity' and 'likelihood', are deeply ingrained in academic habits of thought and expression, and might well be on the increase" (Leech et al., 2009, p. 75).

In addition, the striking frequency of the modals in academic prose is associated with their polysemous nature, allowing writers to convey different modal meanings, which are in some cases notoriously difficult to discern (Biber et al., 1999). This has been attested by the

present study, with respect to the use of both the English modal *may* and its Croatian cognate *moći*, which apart from the epistemic and existential meanings may exhibit congruent overlaps between epistemic and dynamic modal readings. As has been shown, the fact that the distinction between the discrete modal meanings can be blurred may be strategically exploited by research article writers, allowing them to hedge their claims, where deemed as appropriate (Hyland, 1998).

With respect to the distribution of the remaining categories of the epistemic devices analyzed here, the present Engcor results are generally in line with the LSWE Corpus findings, showing that the use of the verbs taking a complement clause in academic prose overrides the use of adjectives and nouns in the same syntactic pattern (Biber et al., 1999). The Crocor findings show a similar distributional pattern concerning the use of the congruent epistemic categories, the only exception being that the *da*-complementation is controlled by adverbs in Croatian as opposed to adjectives in English.

In regard to the use of the epistemic verbs, the findings show that they are the second most frequent category in both sub-corpora, though more frequently employed in Crocor than in Engcor. The saliency of the given verbs can be related to the centrality of citation in academic writing and taking a stance towards other people's work against which one's research is situated. This use of the epistemic verbs is particularly salient for the Croatian writers. In addition, lexical verbs allow writers to take an explicitly subjective stance and step into a text, when it is estimated to be rhetorically important. As the present findings have shown, this was particularly important to English writers when announcing their research hypotheses and predictions. Croatian writers also intrude into their texts, aligning themselves with the personal epistemic judgments, though, as previously discussed, the use of the epistemic verbs in Personal Self-reference is much less salient in Crocor as compared to Engcor.

The use of the epistemic adverbs and adjectives is more salient in Crocor than in Engcor. As noted earlier, the use of the adverb *moguće* controlling a *da*-complement clause is a particularly salient means of conveying epistemic modality in the Croatian sub-corpus. By contrast, the use of the epistemic adverbs and adjectives in conveying epistemic stance is significantly less salient in Engcor.

As for the use of the epistemic-evidential verbs, the findings point to their significantly higher distribution in Engcor than in Crocor. Based on the obtained findings, it might be suggested that the fact that particularly the verb *seem* may occur in a range of different patterns, such as the co-occurrences with adjectives controlling a complement clause (e.g. *it seems likely that…*), inanimate subjects in subject positions (e.g. *evidence seems to suggest that*), etc., seems to be well-exploited by Engcor writers as it allows versatile possibilities in hedging their claims. On the other hand, the epistemic uses of the Croatian verb *činiti se* are associated with a narrower range of syntactic patterns, most notably with a *da*-complementation clause, which seems to provide Croatian writers fewer possibilities for conveying epistemic stance in their writing.

Finally, with respect to the low frequency of the epistemic nouns in both corpora, as discussed earlier, the fact that the *Noun*-complementation pattern (and presumably its congruent pattern in Croatian) is generally characterized as foregrounding the writer's position and making it explicit may not be particularly salient with respect to the use of the epistemic nouns examined in the present study. Apparently, both Engcor and Crocor writers resort to other more implicit ways of expressing the hedged stance towards the propositional content.

With respect to the distribution of the epistemic devices across the RA sections, both the Engcor and Crocor findings point to the congruent distributional pattern of the use of

epistemic devices, reflecting thus the overall rhetorical purposes of each RA section. As can be seen in Figure 18, the highest frequency of the epistemic markers was recorded in the Discussion section, followed by the Introduction and the Results, while the use of the epistemic devices in the Method section was very low in both sub-corpora. Overall, the findings point to higher frequencies of the English epistemic devices in all RA sections as compared to the Croatian devices. The highest discrepancy in the frequencies was recorded in the Discussion, followed by the Introduction, while a quite similar tendency of the use of the epistemic devices was recorded in the Results and Method sections across both sub-corpora.

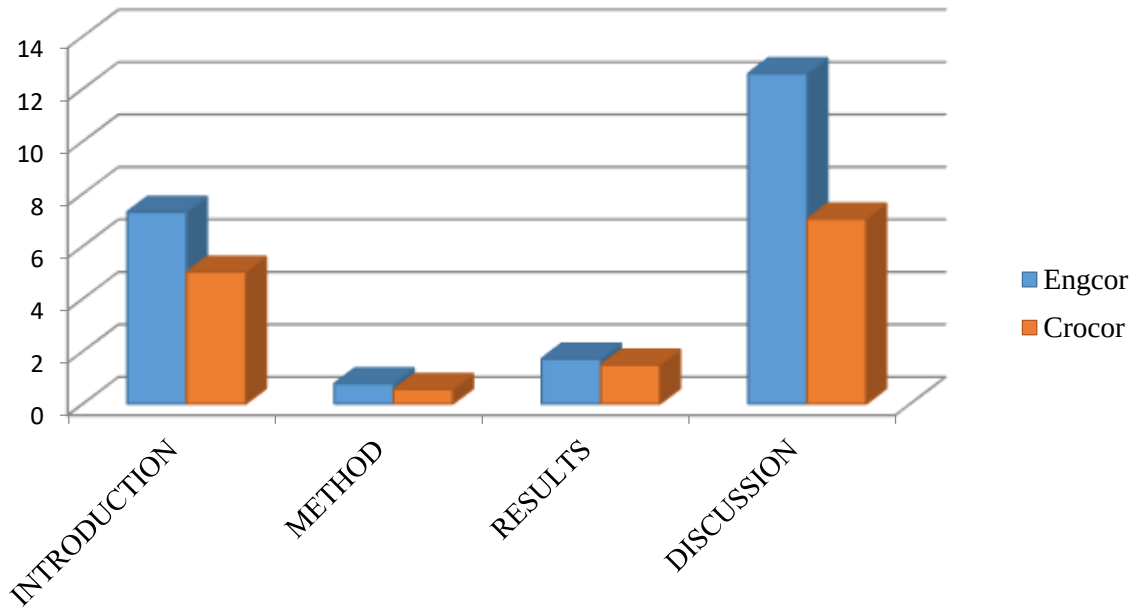

Figure 18. Distribution of the grammatical categories of the epistemic devices across IMRAD in Engcor and Crocor

The preceding discussion has aimed to present the comparative findings with respect to the use of epistemic devices analyzed in the two sub-corpora in the present study. In sum, despite different distributional patterns of the epistemic devices in Engcor and Crocor, the fact that they are more frequently employed in Engcor as compared to Crocor merits further attention. However, prior to drawing a foregone conclusion that Engcor writers hedge more

than their Croatian peers, it must be emphasized that the present study has focused on a particular set of epistemic devices used to realize hedging purposes in disciplinary writing. As previously discussed, though epistemic markers are considered to constitute the core lexico-grammatical devices used for hedging purposes, hedging functions may be realized by a range of different linguistic means beyond those referring to epistemic modality (Fraser, 2010). In addition, hedging may be realized by clausal elements or even whole clauses which may refer to a range of different constraints concerning the theoretical or methodological frameworks, writers' limited knowledge, etc. (Hyland, 1998; Koutsantoni, 2006).

The limited scope of the present study, therefore, does not allow drawing any firm conclusions on the characteristic features of hedging in disciplinary writing. Rather, the present results may serve to point to the tendencies in some preferred or less preferred patterns in the use of the selected epistemic markers in the cross-cultural disciplinary corpora analyzed. With that in mind, the fact that the obtained results show a higher frequency of English epistemic devices performing hedging functions as compared to Croatian devices corroborates the overall findings of prior cross-cultural research (Chapter 3), which show that a broad notion of hedging is a more salient feature of the Anglo-American disciplinary writing as compared to that of some other languages, such as Norwegian and French (Vold, 2006a), Lithuanian (Šinkūnienė, 2011), Spanish (Martín-Martín, 2008), Chinese (Hu & Cao, 2011), Bulgarian (Vassileva, 2001), etc.

In addition, cross-cultural research also shows that the Anglo-American writing style tends to be characterized as more personalized, pointing to a higher degree of a writer's visibility in the text as compared to the writing styles in some other languages, such as Bulgarian, Russian, French (Vassileva, 1998), Spanish (Dueñas, 2007), Italian (Molino, 2010), etc. As previously discussed, the present findings show a significantly higher

frequency of the use of the English epistemic verbs in Self-reference as compared to the Croatian lexical verbs.

In an attempt to account for the cross-cultural differences in the degree of commitment academic writers attach to their claims as well as the level of their visibility in a text, some previous studies have considered wider cultural characteristics presumed to affect the distinctive rhetorical practices observed in the instances of academic writing. Prior to exemplifying some of these, it should be emphasized that the present study does not follow that research strand and does not aim to deal with the way the distinctive cultural values shape the intellectual activities and accordingly the academic writing under study (Koutsantoni, 2005). Therefore, the section that follows is meant to be of illustrative nature only, with the aim of shedding light on the way how the distinctive cross-cultural findings in academic writing have been approached in some previous studies.

10.4 Cross-cultural research on academic writing revisited

The first study outlined here is Koutsantoni's (2005) analysis on a range of lexico-grammatical devices indicating certainty and commitment, such as certainty adverbs (e.g. *clearly, obviously*), lexical verbs (e.g. *show, demonstrate*), appeals to common knowledge (e.g. *it is known that*), etc. in published research articles written by English, Greek, and Greek writers writing in English.

The analysis showed that Greek authors expressed a significantly higher degree of commitment and assertiveness in constructing their claims as opposed to their English counterparts. The author related the cross-cultural variations in the employment of the given rhetorical strategy with a particular set of cultural characteristics and values, namely power distance, uncertainty avoidance, and individualism/collectivism, as discussed by Hofstede

(as cited in Koutsantoni, 2005).[158] As a way of illustration, a high degree of boosted expressions in the Greek RA corpus may be, among others, related to a highly collectivist character of the Greek culture, in which a great emphasis is placed on in-group consciousness, avoidance of plurality of opinions, a search for the absolute truth, a great need for consensus and accordingly more control of uncertainty of knowledge (Koutsantoni, 2005). Thus, Greek authors used more certainty expressions and generally adopted a more assertive tone in conveying their claims in order to emphasize solidarity with in-group members, showing in that way a support to shared disciplinary knowledge (Koutsantoni, 2005).

Conversely, the Anglo-Saxon cultures, characterized as more individualistic, place more value on diversity of individual opinions, are more welcoming to individual initiatives and freedom, and are less inhibited in admitting limitations or uncertainties of knowledge (Koutsantoni, 2005). According to the author, this may account for a tendency of English writers to show greater reluctance in expressing a high degree of certainty in their claims, resorting thus to a generally more cautious tone in their writing.

The second study outlined here refers to Hu and Cao's (2011) cross-cultural comparison of the use of hedges and boosters in research article abstracts written by Chinese and English scholars and published in English-medium and Chinese-medium journals in applied linguistics. The study showed that Chinese abstracts contained a markedly higher frequency of boosters than hedges, suggesting that Chinese expressed a higher degree of commitment to their claims and conveyed a more assertive stance than their English colleagues. The latter showed more preference to the use of epistemic devices, conveying

[158] It should be noted that Koutsantoni (2005) provides a more detailed account of the observed differences between the two academic styles, relating them to the additional cultural characteristics, such as educational systems, preferred politeness strategies, etc. However, a fuller account of these extends the scope of the present discussion.

thus a more tentative and modest authorial voice in their writing. The authors accounted for the variations in the use of the devices under study by referring to a variety of sources,[159] such as different philosophical roots underlying the Anglo-American vs. Chinese cultural practices. According to the authors, the Anglo-American cultures rely on the Socratic and Aristotelian philosophical thoughts, placing thus much more emphasis on the notions such as questioning one's own and other scholars' ideas but equally so the established knowledge, providing argumentation and anticipating counter argumentation, engaging in a debate, etc. Against such a background of knowledge construction, academic writers are expected to adopt a generally more tentative and circumspect attitude when expressing their arguments or commenting on those of others with the ultimate aim of having their claims acknowledged by the members of a discourse community. By contrast, Chinese cultural practices rely on Confucian and Taoist traditions which are guided by the belief that the truth is self-evident, and not susceptible to further questioning. In academic writing this means that more emphasis is placed on asserting authoritative knowledge rather than constructing it through negotiation with knowledgeable readers (Hu & Cao, 2011). As a consequence, Chinese writers used hedges to a considerably lesser extent and conversely conveyed more assertive stance in their writing than their English counterparts (Hu & Cao, 2011).

With respect to cross-cultural variations in the use of the self-mentions in academic writing, as noted, some previous research points to its more frequent use in the Anglo-American as compared to the writing in other languages (Vassileva, 1998; Dueñas, 2007). Accounting for a higher use of self-mentions in research articles in English as compared to Spanish, Dueñas (2007) observes that the size and competiveness of the academic

[159] According to Hu and Cao (2011), additional motivation for the given findings may be related to the different perceptions on the role of science in the two cultures, the writers' level of language proficiency, and different types of abstracts (experimental vs. non-experimental) included in the analysis.

communities may contribute to the level of self-representation in cross-cultural academic writing. Writing for the international audience, Anglo-American writers may have a greater need to present themselves as original contributors to the disciplinary knowledge as compared to writers publishing in smaller and more homogenous national academic context.

Generally, the way cultural characteristics may be reflected in the distinctive features of academic writing has been associated with the often-cited Galtung's (1981) taxonomy of the four dominant intellectual styles, viz. *saxonic, teutonic, gallic*, and *nipponic*. According to the author, each style is linked with a particular geographical area as well as the specific university centers, though the influence extends beyond the national borders. Thus, the *saxonic* style is prevalent in Britain and the USA and is accordingly associated with some leading British and US universities, the *teutonic* in Germany, yet exerting influence on other Eastern European countries, including Russia,[160] the *gallic* in France and South America, and the *nipponic* in Japan. According to Galtung, the styles are distinguished by the distinctive ways of approaching and accounting for knowledge. As a way of illustration, the *saxonic* style and accordingly academic communities are characterized as showing preference to debates and diversity of opinions, with the ultimate aim of finding a consensus, whereas the *teutonic* and *gallic* are characterized as more elitist, authoritarian, and less tolerant to diverse opinions. Furthermore, the *saxonic* and *nipponic* styles are less inclined to theory-formation and paradigm analysis and rely more on collection and integration of the data. By contrast, the *teutonic* and *gallic* styles are more oriented to the formation of the theories which are considered to be more solid and less ambiguous than the data.

[160] For example, according to Koutsantoni (2005), the Greek academic writing style as well as the educational system may be linked to the *teutonic* style. Similarly, Vassileva (2001) observes that the Bulgarian writing style can be partly chacterized as *teutonic*, by placing more focus on content rather than form.

However, it should be noted that though appealing, the account of the proposed intellectual styles was not based on the empirically sound data but was the result of the author's long-standing experience with the methodology of sciences and contacts with different intellectual communities. Taking a critical stance towards Galtung's oversimplified and rather impressionistic approach, Sanderson (2008) generally warns against reducing cross-cultural findings obtained in research on academic writing to some pre-determined characterizations of the cultures involved and accordingly drawing inferences on the culturally-determined academic writing styles. A tendency to reduce all the observed differences in cross-cultural research to the differences in the native cultures may run the risk of stereotyping the cultures, which seems to be a general weakness of the studies in contrastive rhetoric (Mauranen, 2001; Sanderson, 2008). As Sanderson (2008, pp. 283-284) notes "any serious empirical attempt at investigating the influence of culture on language use will produce tendencies and strategies, not black and white answers." Therefore, according to the author, the focus of the cross-cultural studies into academic discourse should be rather on "*how* authors from different cultures orient themselves towards their target audience, and how NNS of whatever language may be helped to do this more effectively in the target culture" (p. 281).

Whatever the underlying reasons for the differences in the rhetorical preferences between the Anglo-American academic writing and that of other languages, and however the former is conceptualized, the fact remains that hedging taken in broadest sense of the word can be considered as a characteristic generic or "commonly accepted feature" of academic style in English (Bennett, 2009, p. 46). The latter may be supported by Bennett's findings obtained by the examination of 41 English writing style manuals, in which academic writers are consistently guided to use hedges so as to restrain from categorical claims and avoid overstatements in their writing.

When it comes to the Croatian scientific functional style, as has been repeatedly stated in this study, the lack of target literature as well as empirical research on the subject matter prevents linking the present findings with some characteristic features of the Croatian academic style with respect to the use of epistemic language and its pragmatic functions in terms of hedging.

The use of self-mentions seems not to have reached consensus in the English writing style manuals, as some authors advocate the use of the active voice, while others opt for more impersonal forms, such as personalization, adverbs or the passive voice (Bennett, 2009). Given the present findings, it may be argued that Engcor writers prefer using personal forms with respect to the use of the epistemic verbs examined. However, whether they do so with respect to other semantic categories of the lexical verbs should be attested by further analysis adopting a different research focus.

With respect to the Croatian scientific style, as previously mentioned, impersonal forms are generally preferred over the personal forms (Zelenika, 1998; Silić, 2006). Considering the use of the epistemic verbs in Crocor, the present findings are in line with this general convention of the Croatian academic style but beyond that it is not possible to claim that the disciplinary writing examined here conforms to the prevailing norms of the Croatian scientific writing style.

In sum, the present chapter has primarily aimed to present the overall results with respect to the use of epistemic devices in the English and Croatian sub-corpus of research articles in psychology and to establish the patterns of similarities and differences in their use across the two sub-corpora. In addition, a reference has been made to some cross-cultural research which attempted to attribute the cross-cultural differences in the degree of certainty writers attach to the claims to the specific sets of cultural characteristics. The final section in

the present study consolidates the overall findings with respect to the research aims, outlines the limitations of the present study and suggests some further implications for future research and teaching practice.

11. Conclusion

The present study has aimed to illuminate how Croatian and English writers of research articles in psychology use a particular set of modal devices to convey their epistemic stance towards the propositional content. In that respect, it can be considered as a genre-based study of the pragmatics of epistemic modality in the specific disciplinary writing in English and Croatian. The analysis is inspired by the prevailing approach to academic writing as an instance of a socially-situated language use in which scientific knowledge is considered to be socially constructed through a writer-reader interaction (Hyland, 2004). This approach seems to be prevalent with respect to the academic writing in English (Hyland, 2004), whereas in Croatian it has been gaining attention along with the more traditional accounts of the scientific style in light of the functional stylistic approach (Silić, 2006; Badurina, 2008).

It is important to point out that the study has not aimed to characterize the academic writing style either in English or Croatian based on the obtained findings. In addition, being focused on the specific aspect of the evaluative language use in a single academic genre, the study has not attempted to characterize the entire academic writing in psychology in English and Croatian. Rather it has examined the way the particular epistemic markers in English and Croatian are used to hedge writers' claims and signal their non-categorical nature across the IMRAD structure of a research article in the specific sub-disciplines of psychology. With reference to the research aims, the overall findings of the present study may be reiterated and summed up as follows:

1. **Croatian writers of research articles in psychology** used the epistemic devices in the following order of frequency: epistemic modal verbs, epistemic verbs, epistemic adverbs and adjectives, epistemic-evidential verbs, and epistemic nouns. The findings showed almost identical frequencies of the modal and lexical verbs,

followed by the epistemic adverbs, while the remaining categories of the epistemic devices were used much less frequently. With respect to their distribution across the IMRAD structure of a research article, the epistemic devices were mostly used in the Discussion section, though their frequency in the Introduction section was relatively close to the former. The frequencies of the epistemic devices in the remaining two RA sections were significantly lower by comparison.

2. By contrast, **English writers of research articles in psychology** used the epistemic devices in the following order of frequency: epistemic modal verbs, epistemic verbs, epistemic-evidential verbs, epistemic adjectives, adverbs, and epistemic nouns. The findings showed the overwhelming frequency of the epistemic modal verbs, while the remaining categories of the epistemic markers were used significantly less frequently. With respect to the distribution across the IMRAD structure, the epistemic devices were prevalently used in the Discussion, followed by the Introduction section. The remaining RA sections showed considerably lower frequencies of the epistemic devices by comparison.

3. **The comparison of the findings** showed both similarities and differences in the use of the epistemic devices by Engcor and Crocor writers. Despite different frequencies of the individual categories, the results showed similar tendencies towards a preferred use of the modal and epistemic verbs by both Engcor and Crocor writers, while the epistemic nouns were least frequently employed in both sub-corpora. The major difference in the distributional patterns of the epistemic devices across the two sub-corpora was reflected in the fact that the English modals were used overwhelmingly more frequently as compared to other devices, which makes them the most salient category of the epistemic devices in the present English sub-corpus. By contrast, the Crocor results did not point to the saliency of a single category of

the epistemic devices. Rather in conveying their epistemic stance the Croatian writers showed preference towards using different epistemic devices, in particular modal and lexical verbs as well as the epistemic adverbs.

4. When it comes to **the distribution of the epistemic devices across IMRAD sections**, the comparative findings pointed to similar tendencies, with the Discussion section showing the highest density of the epistemic devices in both sub-corpora, followed by the Introduction section. In the Method and Results sections the frequencies of the epistemic devices in both corpora were quite low by comparison. Generally, the distribution of the epistemic devices reflected the overall rhetorical functions of the respective sections of the research articles. In the Discussion section writers provide interpretations of their research findings, accounting for their significance and contributions to the existing body of disciplinary knowledge. In providing new knowledge claims and in placing them within the established disciplinary knowledge, writers generally need to exert caution in not overstating their claims or claiming more than warranted by the evidence (Swales, 1990). By using a range of different hedges in this section, psychology writers in both corpora marked the provisional character of the claims, allowing thus a possibility of alternative viewpoints and interpretations which could possibly arise if the research had applied different methodology, had been based on a different sample, had accounted for different variables, etc. The use of the epistemic language in the Introduction sections mainly related to the evaluation of other scholars' work against which the given research was positioned as well as presenting the research hypotheses. The use of epistemic language in the remaining RA sections was less salient which may be accounted for by the writers' focus on the descriptions of the research methodology, data collection, obtained results, etc., which generally does

not make the use of the epistemic language as salient as in other RA sections. A slightly higher frequency of the epistemic devices in the Results as compared to the Method sections in both sub-corpora reflects the fact that some writers did interpret the results immediately after presenting them, though a more profound interpretation of the results was given in the Discussion section.

Despite the generally similar trend with respect to the frequency of the epistemic devices across the IMRAD structure in both sub-corpora, the findings point out that the epistemic devices were significantly more frequently used in the Discussion than in the Introduction sections in Engcor, while in Crocor the discrepancy of the results in the two sections was much smaller. In broad strokes, this might suggest that Engcor writers mostly employed hedges in the interpretations and implications of the findings and less in outlining their research or evaluating previous research. Crocor writers used hedges in both sections relatively similarly, suggesting their salient use in taking a stance towards other scholars' research, positioning their own as well as the interpretations of the research findings. These assumptions should be, however, taken as broad generalizations given that a detailed move analysis of the research article sections has not been the focus of the present study.

5. **The overall results** point to the higher frequency of the epistemic devices used in the English sub-corpus as compared to the Croatian sub-corpus of research articles in psychology. The present findings generally corroborate previous cross-cultural findings (Vold, 2006a; Martín-Martín, 2008; Hu & Cao, 2011; Šinkūnienė, 2011), pointing to the more salient use of hedges and accordingly their status of an entrenched rhetorical norm in the Anglo-American writing as compared to the academic writing in other languages examined (Hyland, 2005a; Bennett, 2009). A lack of the comprehensive accounts of the Croatian academic writing style relevant

to the scope of the present study as well as the empirical studies of the disciplinary writing in Croatian prevent relating the overall present results with the characteristic features of the Croatian academic writing style in general or previous research on the given disciplinary writing in particular.

6. As previously noted, the discussion on **the hedging functions of the epistemic devices** under study was loosely based on Hyland's polypragmatic model of scientific hedges (1998). In other words, the proposed model was followed here as a broad reference point given that it provides a framework within which the use of hedges in research article writing may be discussed.

   The present findings showed that Engcor and Crocor writers used the epistemic devices to express congruent hedging functions, primarily associated with the reliability types of hedges (Hyland, 1998). According to the proposed model, these hedges are used to signal a writer's uncertainty with respect to the propositional content and to indicate the extent to which the claims may be considered reliable and accurate. Hedges assist writers to increase the precision of the claims and signal that the claims may be considered reliable as far as can be determined given the limited state of knowledge (Hyland, 1998). In both corpora, the reliability type of hedges was associated with the core epistemic markers, viz. modal verbs, adjectives, adverbs, and nouns. As Hyland (1998) notes, while reliability-oriented hedges are mainly concerned with increasing the precision of the claims, writer-oriented hedges are concerned with diminishing the writers' presence in the text, allowing them to remain distant from the content of the propositions. This type of hedges is mainly concerned with reducing the writers' personal involvement and thereby full responsibility for the claims for which more solid evidence is absent (Hyland, 1998). In both sub-corpora, these hedges were concerned with the use of the impersonal

forms of the epistemic verbs and epistemic-evidential verbs. Finally, the use of the personal forms of the epistemic verbs or self-mentions was interpreted here as a strategic writers' choice to foreground their epistemic stance, signaling thus their strong alignment with the claims. While self-mentions were present in both sub-corpora, their use was significantly more salient in the English sub-corpus of research articles as compared to the Croatian. This finding is generally in line with some previous cross-cultural studies on academic writing, showing that self-representation is a more prominent feature of academic writing in English as compared to that of other languages (Vassileva, 1998; Sanderson, 2008; Molino, 2010). A lower frequency of self-mentions in the Croatian corpus may be considered to be broadly in line with the prevailing characterization of the Croatian scientific style as a predominantly impersonal one (Silić, 2006).

It is important to highlight that the proposed dichotomy of the hedges is regarded here in approximate rather than in absolute terms. In other words, hedges are understood as inherently polypragmatic, suggesting that a single form cannot be always associated exclusively with one but rather more meanings simultaneously (Hyland, 1998). That is, while indicating the extent to which a claim may be considered as reliable in the absence of a full warrant for it, writers are also signaling a lack of commitment towards them, suggesting that a clear-cut line between the two broad categories of the hedges is not always or more importantly not even necessary to draw (Hyland, 1998). As Hyland notes, regardless of a specific type, the core function of all hedges is reducing the negatibility of the claims and increasing the chances of their acceptance, the difference being in their more salient features.

11.1 Strengths and limitations of the present study

The relevance of the present research may be regarded in two main aspects. The first concerns the insights gained with respect to the linguistic category of epistemic modality in the two languages under study, particularly concerning the semantics of the English *may* and its Croatian cognate *moći*. As was shown in the analysis, in addition to conveying epistemic and dynamic readings, both modals show the congruent indeterminacy, i.e. the overlaps between the epistemic and dynamic readings. The present findings point to the striking difference with respect to the ratio of the epistemic readings of the given modals, showing that *may* was prevalently used in the epistemic sense (68%), while *moći* was most commonly used as a dynamic modal (82%). Within the context of the cross-linguistic studies on modality, this finding merits closer attention and further evidence.

In addition, the analysis of the corpus data tapped into the linguistic category of evidentiality, in particular with respect to the verbs *seem* and its Croatian cognate *činiti se*, pointing to some similarities and differences in the patterns of their use. As was shown, both *seem* and *činiti se* may be interpreted as epistemic-evidential markers performing hedging functions in the corpus of research articles under study. In addition, some uses of the given verbs in both sub-corpora were interpreted as being concerned with the reasons of politeness only, pointing to their congruent polyfunctional nature. The differences in the use of the given verbs may be reflected in the fact that English *seem* and *appear* occurred in a wider range of syntactic patterns as compared to the Croatian *činiti se*, offering Engcor writers more possibilities in coding their epistemic stance. The observed similarities and differences in the use of the given English and Croatian verbs provide an initial insight into their linguistic behavior, which given their salient use in the disciplinary writing under study merits a more profound examination both in the individual languages as well as cross-linguistically.

With respect to the main scope of the present study, the relevance of the present research may be reflected in the fact that, at least to my knowledge, it is the first of its kind with respect to Croatian academic writing as well as with respect to the comparison with the English academic writing. In that sense it provides insights into the epistemic language use in the given disciplinary writing in Croatian, informing us of the way epistemic markers are used for hedging purposes in the research articles in particular branches of psychology. Taking a cross-cultural perspective, the analysis shows the specifics of the use and distributional patterns of the epistemic markers in the English and Croatian corpora, contributing thus to the field of cross-cultural research on academic writing. Prior to elucidating additional implications of the present research concerning further linguistic studies as well as the teaching practice, it is important to outline some major limitations against which the present findings and the conclusions drawn are to be regarded.

The limitations of the present research relate to different levels of analysis. First, it is important to stress that the study did not apply a rigorous statistical analysis so it is not possible to claim whether the observed differences in the obtained frequencies of the linguistic data are statistically significant. Rather, the aim of the study was to use the given frequency analysis to gain insight into the general distributional patterns of the use of the epistemic devices in the examined cross-cultural disciplinary writing.

The second major constraint regards the linguistic level of the analysis, in particular the polysemy of the modal verb *may* and its Croatian cognate *moći*. As previously discussed, in order to diminish the subjectivity in discerning the most likely reading of the given modal verbs, a second rater was employed so as to increase the validity of the findings. Despite a high agreement rate in the findings obtained in the rating procedure (ca. 90%), it is possible that in some cases the meaning of the modal could have been rated differently, though it is believed that such cases were rather limited. Nevertheless, future studies might employ

additional rater(s) and apply more rigorous statistical methods in analyzing the data, which may render an empirically sounder analysis.

Another aspect regarding the linguistic aspect of the study regards the taxonomy of the epistemic devices used in the analysis. As Hyland notes (2004), an analysis which aims to illuminate the specific textual features can never be open-ended and exhaustive but is always limited on a certain set of the items which inevitably leaves the others out of the focus. In that sense and with respect to the English sub-corpus, the present analysis included the epistemic markers which were generally reported to be salient in the literature and previous empirical research congruent to the scope of the present study. Due to the lack of the targeted literature in Croatian relevant to the present research as well as the empirical studies in the Croatian academic discourse, taxonomizing the Croatian devices was to a certain extent led by the English data but nonetheless all the devices used in the analysis were rechecked in the available Croatian literature. Though the main aim of the study was not to provide an exhaustive taxonomy of the epistemic devices, it is believed that the list of the selected epistemic devices in the Croatian sub-corpus captured most of the central epistemic markers. However, their centrality in academic writing in Croatian awaits confirmation by further empirical studies.

Furthermore, the present findings and their implications should be regarded with reference to the constraints dealing with the corpus compilation. In other words, CORACEN consists of the research articles covering the topics from a limited range of sub-branches of psychology. This means that the current results reflect some of the potentially characteristic features of the epistemic language use only in regard to research article writing in certain domains of psychology but not in psychology as a social science in its entirety. In other words, it is possible that the congruent analysis of the research articles from other psychological sub-disciplines would yield different results. In addition, the present study did

not account for the extra-linguistic variables, i.e. the individual factors of the research article writers, in particular their academic status. It is possible that more distinguished scholars with longer academic carreers adopt a more assertive tone in their writing as compared to novice writers who being new to the field may have to hedge their claims more frequently. Of no less importance is the familiarity with the topic dealt with in the given article. A longer writers' research interest in a particular subject matter and the quantity of the related publications would perhaps impact the degree of certainty writers attach to certain claims as opposed to those who deal with the given subject matter for the first time. These are some of the variables which future research might take into account in examining the evaluative language use in academic writing.

11.2 Recommendations for further research and implications for teaching practice

The present study provides avenues for further research in different directions. Being focused solely on the use of the epistemic markers performing hedging functions, the analysis is far from being conclusive on the use of hedges in research article writing in psychology. In order to gain a more comprehensive insight into the disciplinary conventions on hedging, prospective studies may extend the present taxonomy and examine the use of other linguistic devices performing the congruent pragmatic functions. Moreover, further research might focus on a more fine-grained analysis of the use of hedges in the specific moves across the IMRAD structure of a research article in the given disciplinary writing (Swales, 1990; Pho, 2013).

In addition, the model presented here may be applied to the analysis of the epistemic language use in other disciplinary writings in Croatian, not only with respect to the research article but to other research or students' genres as well. As has been discussed, previous

research has shown considerable variations in the frequency of hedges but also other metadiscoursal devices in cross-disciplinary writing in English, reflecting broadly the distinctive nature of knowledge construction in particular disciplines (Hyland, 2005a, 2005b). Academic discourse in Croatian is severely underresearched in that respect so gaining knowledge into the disciplinary writing conventions still awaits empirical research. As has been discussed with reference to academic English, distinctive academic disciplines have their preferred ways of citation practices, self-mentions, the use of more or less cautious languages in presenting knowledge claims, etc. (Hyland, 2005a). In that sense, academic discourse can hardly be conceptualized as monolith and uniform (Hyland, 2004; Sanderson, 2008). Beyond a rather broad characterization of the scientific style in Croatian linguistic literature (Silobrčić, 1994; Zelenika, 1998; Silić, 2006), there seems to be a growing need for the disciplinary-based research which can best illuminate the disciplinary-specific features of academic Croatian.

Beyond theoretical considerations, the insights gained from such research might be particularly relevant for the applicable teaching purposes. For instance, the findings might provide the empirical basis for the syllabi of the disciplinary-specific writing courses in academic Croatian at all levels of tertiary education. This seems to be particularly important at the doctoral levels of study considering the fact that writing and publishing research articles lies at the core of pursuing an academic career so developing students' academic writing skills seems to be particularly important. Thus, continuing research into the writing conventions of the distinctive disciplines in Croatian seems to be fully justified.

In addition to furthering knowledge on academic writing in Croatian, considering the ever-growing importance of publishing internationally and the role of English in that respect, the implications of the present research might be relevant for prospective much-needed cross-cultural research on disciplinary writing conventions in Croatian and English.

As has been shown in this study, academic writing in different languages may and often does exhibit distinctive writing conventions which the non native English disciplinary scholars may not be fully aware of when writing in English. Therefore, the research into intercultural rhetoric should be focused on discerning the distinctive features of the cross-cultural academic writing as these findings might turn to be beneficial for non native scholars, students, instructors, or translators alike or anyone whose real-world needs concern academic writing in English.

However, in order to address these needs adequately and reach the interested parties in an institutionalized form of instruction, the research findings should be exploited in designing the teaching materials which would cover the areas where the languages examined diverge (Sanderson, 2008). As a way of illustration, the findings of the present study have revealed the distinctive patterns in the use of self-mentions, pointing to their more prominent use in the English than in the Croatian sub-corpus. Discussing similar issues, Sanderson (2008) argues that non native academics already writing in English might best benefit from the discipline-specific and contrastive language courses addressing the distinctive norms of the cross-cultural disciplinary language use, particularly in relation to English. Therefore, further cross-cultural studies on academic discourse seem to be a promising research area. With respect to the Croatian context, it is believed that the findings of the present study might contribute to deepening the knowledge of the disciplinary writing in the two languages examined and equally so provide an incentive for further research of academic writing relevant to the needs of the Croatian academic community in general.

12. Appendices

Appendix A Frequency counts of the epistemic devices in Engcor

Table A1

Raw and normalized frequencies of the modal verbs across IMRAD in Engcor

EPISTEMIC MODAL VERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
May	179	2,81	10	0,19	18	0,28	336	5,63	**543**	**2,28**
Might	39	0,61	8	0,15	7	0,11	57	0,95	**111**	**0,466**
Could	31	0,48	3	0,05	10	0,15	66	1,10	**110**	**0,462**
TOTAL per section	**249**	**3,91**	**21**	**0,40**	**35**	**0,55**	**459**	**7,69**	**764**	**3,21**

Table A2

Raw and normalized frequencies of the epistemic adverbs across IMRAD in Engcor

EPISTEMIC ADVERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Likely	12	0,18	2	0,03	4	0,06	17	0,28	**35**	**0,14**
Perhaps	6	0,09	0	0,00	1	0,01	13	0,21	**20**	**0,08**
Possibly	3	0,04	0	0,00	3	0,04	6	0,10	**12**	**0,05**
Presumably	3	0,04	0	0,00	0	0,00	6	0,10	9	0,03
Probably	0	0,00	1	0,01	0	0,00	4	0,06	5	0,02
Conceivably	0	0,00	0	0,00	0	0,00	1	0,01	1	0,004
Plausibly/may be	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
TOTAL per section	**24**	**0,37**	**3**	**0,05**	**8**	**0,12**	**47**	**0,78**	**82**	**0,34**

Table A3

Raw and normalized frequencies of the epistemic adjectives across IMRAD in Engcor

EPISTEMIC ADJECTIVES										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Possible	13	0,20	2	0,03	3	0,04	44	0,73	**62**	**0,26**
Likely	15	0,23	1	0,01	0	0,00	34	0,57	**50**	**0,21**
Unlikely	4	0,06	0	0,00	1	0,01	8	0,13	**13**	**0,05**
Plausible	3	0,04	0	0,00	0	0,00	2	0,03	**5**	**0,02**
Probable	1	0,01	0	0,00	0	0,00	1	0,01	**2**	**0,008**
TOTAL per section	**36**	**0,56**	**3**	**0,05**	**4**	**0,06**	**89**	**1,49**	**132**	**0,55**

Table A4

Distribution of attributive and predicative uses of the epistemic adjectives in Engcor

	Raw frequency	Normalized frequency (n/1000)
Possible_predicative_*that*-clause	37	0,15
Possible_attributive use	25	0,10
Likely_predicative_ *that*-clause	17	0,07
Likely_predicative_*to*-clause	25	0,10
Likely_attributive use	8	0,03
TOTAL PREDICATIVE USE_ POSSIBLE+LIKELY	79	**0,33**
TOTAL ATTRIBUTIVE USE_ POSSIBLE+LIKELY	33	**0,13**
Unlikely/Plausible/Probable_ predicative_*that*-clause	10	**0,04**
Unlikely/Plausible/Probable_ predicative_*to*-clause	8	**0,03**
Unlikely/Plausible/Probable_ attributive use	2	0,0008
TOTAL PREDICATIVE USE	97	**0, 40**
TOTAL ATTRIBUTIVE USE	35	**0,14**

Table A5

Raw and normalized frequencies of the epistemic nouns across IMRAD in Engcor

EPISTEMIC NOUNS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Possibility	13	0,20	4	0,07	7	0,11	14	0,23	**38**	**0,15**
Likelihood	3	0,04	1	0,01	10	0,15	3	0,05	**17**	**0,07**
TOTAL per section	**16**	**0,25**	**5**	**0,09**	**17**	**0,26**	**17**	**0,28**	**55**	**0,23**

Table A6

Raw and normalized frequencies of the epistemic verbs across IMRAD in Engcor

EPISTEMIC VERBS SELF-REFERENCE										
PERSONAL SELF-REFERENCE										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
hypothesize	31	0,48	0	0,00	4	0,06	10	0,16	**45**	**0,18**
predict	26	0,40	0	0,00	11	0,17	5	0,08	**42**	**0,17**
believe	1	0,01	1	0,01	0	0,00	10	0,16	**12**	**0,05**
assume	1	0,01	0	0,00	2	0,03	3	0,05	**6**	**0,02**
anticipate	6	0,09	0	0,00	0	0,00	0	0,00	**6**	**0,02**
theorize	3	0,04	0	0,00	0	0,00	1	0,01	**4**	**0,01**
think	1	0,01	0	0,00	0	0,00	1	0,01	**2**	**0,008**
TOTAL per section	**69**	**1,08**	**1**	**0,01**	**17**	**0,26**	**30**	**0,50**	**117**	**0,49**
IMPERSONAL SELF-REFERENCE										
hypothesize	4	0,06	0	0,00	3	0,04	1	0,01	**8**	**0,03**
assume	2	0,03	1	0,01	4	0,06	1	0,01	**8**	**0,03**
think	2	0,03	0	0,00	0	0,00	3	0,05	**5**	**0,02**
believe	0	0,00	1	0,01	0	0,00	4	0,06	**5**	**0,02**
consider	0	0,00	0	0,00	1	0,01	4	0,06	**5**	**0,02**
conceptualize	3	0,04	1	0,01	0	0,00	0	0,00	**4**	**0,01**
predict	2	0,03	0	0,00	0	0,00	0	0,00	**2**	**0,008**
anticipate	1	0,01	0	0,00	0	0,00	0	0,00	**1**	**0,004**
TOTAL per section	14	0,21	3	0,05	8	0,12	13	0,21	**38**	**0,15**
TOTAL Self-reference	**83**	**1,30**	**4**	**0,07**	**25**	**0,39**	**43**	**0,72**	**155**	**0,65**

OTHER-REFERENCE – INTEGRAL										
believe	2	0,03	0	0,00	0	0,00	0	0,00	**2**	**0,008**
hypothesize	1	0,01	0	0,00	0	0,00	1	0,01	**2**	**0,008**
theorize	2	0,03	0	0,00	0	0,00	0	0,00	**2**	**0,008**
predict	0	0,00	0	0,00	2	0,03	0	0,00	**2**	**0,008**
conceptualize	1	0,01	0	0,00	0	0,00	0	0,00	**1**	**0,004**
TOTAL per section	**6**	**0,09**	**0**	**0,00**	**2**	**0,03**	**1**	**0,01**	**9**	**0,03**
OTHER-REFERENCE – NON-INTEGRAL										
think	5	0,07	0	0,00	0	0,00	0	0,00	**5**	**0,02**
consider	3	0,04	0	0,00	0	0,00	2	0,03	**5**	**0,02**
assume	1	0,01	1	0,01	0	0,00	1	0,01	**3**	**0,01**
believe	2	0,03	0	0,00	0	0,00	0	0,00	**2**	**0,008**
conceptualize	1	0,01	0	0,00	0	0,00	0	0,00	**1**	**0,004**
predict	1	0,01	0	0,00	0	0,00	0	0,00	**1**	**0,004**
TOTAL per section	**13**	**0,20**	**1**	**0,01**	**0**	**0,00**	**3**	**0,05**	**17**	**0,07**
TOTAL Other-reference	**19**	**0,29**	**1**	**0,01**	**2**	**0,03**	**4**	**0,06**	**26**	**0,10**
TOTAL all	**102**	**1,60**	**5**	**0,09**	**27**	**0,42**	**47**	**0,78**	**181**	**0,76**

Table A7

Overall distribution of the individual epistemic verbs in Engcor

EPISTEMIC LEXICAL VERB	Raw frequency	n/1000
hypothesize	**55**	**0,23**
predict	**47**	**0,19**
believe	**21**	**0,08**
assume	**17**	**0,07**
think	**12**	**0,05**
consider	**10**	**0,04**
anticipate	**7**	**0,03**
conceptualize	**6**	**0,02**
theorize	**6**	**0,02**
be regarded as	4	0,016
be viewed as	4	0,016
suspect	3	0,012
speculate	2	0,008
hope	2	0,008
postulate	1	0,004
conceive/doubt/imagine/presume/suppose	0	0,00

Table A8

Raw and normalized frequencies of the epistemic-evidential verbs across IMRAD in Engcor

EPISTEMIC-EVIDENTIAL VERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
seem	21	0,32	2	0,03	8	0,12	43	0,72	**74**	**0,310**
appear	17	0,26	1	0,01	9	0,14	48	0,80	**75**	**0,315**
TOTAL per section	**38**	**0,59**	**3**	**0,05**	**17**	**0,26**	**91**	**1,52**	**149**	**0,62**

Table A9

Normalized frequencies of the individual epistemic devices in Engcor

Epistemic device	Normalized frequency n/1000
May	**2,28**
Might	0,466
Could	0,462
Likely	0,14
Perhaps	0,08
Possibly	0,05
Presumably	0,03
Probably	0,02
Conceivably	**0,004**
Possible	0,26
Likely	0,21
Unlikely	0,05
Plausible	0,02
Probable	0,008
Possibility	0,15
Likelihood	0,07
hypothesize	0,23
predict	0,19
believe	0,08
assume	0,07
think	0,05
consider	0,04
anticipate	0,03
conceptualize	0,02
theorize	0,02

seem	0,310
appear	0,315

Appendix B Frequency counts of the epistemic devices in Crocor

Table B1

Raw and normalized frequencies of the epistemic modal verbs across IMRAD in Crocor

EPISTEMIC MODAL VERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Moći_indicative	39	0,84	1	0,04	9	0,31	54	1,20	**103**	**0,72**
Moći_conditional	38	0,82	2	0,08	4	0,13	29	0,64	**73**	**0,51**
TOTAL per section	**77**	**1,67**	**3**	**0,12**	**13**	**0,44**	**83**	**1,85**	**176**	**1,23**

Table B2

Raw and normalized frequencies of the epistemic particles and adverbs across IMRAD in Crocor

EPISTEMIC PARTICLES/ADVERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Vjerojatno	6	0,13	0	0,00	4	0,13	31	0,69	**41**	**0,28**
Možda	2	0,04	0	0,00	0	0,00	10	0,22	**12**	**0,08**
Moguće	0	0,00	0	0,00	0	0,00	5	0,11	**5**	**0,03**
Plauzibilno	0	0,00	0	0,00	0	0,00	1	0,02	**1**	**0,006**
Valjda	0	0,00	0	0,00	0	0,00	0	0,00	**0**	**0,00**
TOTAL particles per section	**8**	**0,17**	**0**	**0,00**	**4**	**0,13**	**47**	**1,04**	**59**	**0,41**
Moguće je (da)	11	0,23	1	0,04	0	0,00	56	1,24	**68**	**0,47**
Vjerojatno je (da)	1	0,02	0	0,00	0	0,00	6	0,13	**7**	**0,04**
TOTAL adverbs per section	**12**	**0,26**	**1**	**0,04**	**0**	**0,00**	**62**	**1,38**	**75**	**0,52**
TOTAL epistemic particles/ adverbs per section	**20**	**0,43**	**1**	**0,04**	**4**	**0,13**	**109**	**2,43**	**134**	**0,93**

Table B3

Raw and normalized frequencies of the epistemic adjectives across IMRAD in Crocor

EPISTEMIC ADJECTIVES										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Mogući	13	0,28	6	0,25	4	0.13	25	0,55	**48**	**0,33**
Vjerojatan	2	0,04	0	0,00	1	0,03	3	0,06	**6**	**0,04**
TOTAL PER SECTION	**15**	**0,32**	**6**	**0,25**	**5**	**0,17**	**28**	**0,62**	**54**	**0,37**
TOTAL EPISTEMIC PARTICLES/ ADVERBS/ADJECTIVES	**35**	**0,76**	**7**	**0,30**	**9**	**0,31**	**137**	**3,05**	**188**	**1,31**

Table B4

Raw and normalized frequencies of the epistemic nouns across IMRAD in Crocor

EPISTEMIC NOUNS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Mogućnost	4	0,08	0	0,00	3	0,10	12	0,26	**19**	**0,13**
Vjerojatnost	0	0,00	0	0,00	1	0,03	3	0,06	**4**	**0,02**
TOTAL PER SECTION	**4**	**0,08**	**0**	**0,00**	**4**	**0,13**	**15**	**0,33**	**23**	**0,16**

Table B5

Raw and normalized frequencies of the epistemic verbs across IMRAD in Crocor

EPISTEMIC VERBS SELF-REFERENCE										
PERSONAL SELF-REFERENCE										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Smatrati	2	0,04	1	0,04	0	0,00	4	0,08	**7**	**0,04**
Pretpostaviti	3	0,06	0	0,00	2	0,06	8	0,17	**13**	**0,09**
Vjerovati	0	0,00	0	0,00	0	0,00	1	0,02	**1**	**0,006**
Držati	0	0,00	0	0,00	0	0,00	1	0,02	**1**	**0,006**
TOTAL per section	**5**	**0,10**	**1**	**0,04**	**2**	**0,06**	**14**	**0,31**	**22**	**0,15**
IMPERSONAL SELF-REFERENCE										
Smatrati	16	0,34	1	0,04	5	0,17	3	0,06	**25**	**0,17**
Pretpostaviti	42	0,91	0	0,00	3	0,10	21	0,46	**66**	**0,46**
TOTAL per section	**58**	**1,26**	**1**	**0,04**	**8**	**0,27**	**24**	**0,53**	**91**	**0,63**
TOTAL Self-reference	**63**	**1,37**	**2**	**0,08**	**10**	**0,34**	**38**	**0,84**	**113**	**0,79**
OTHER-REFERENCE – INTEGRAL										
Smatrati	30	0,65	0	0,00	2	0,06	7	0,15	**39**	**0,27**
Pretpostaviti	4	0,08	0	0,00	0	0,00	2	0,04	**6**	**0,04**
Držati	0	0,00	0	0,00	0	0,00	1	0,02	**1**	**0,006**
Razumjeti	0	0,00	0	0,00	0	0,00	1	0,02	**1**	**0,006**
TOTAL per section	**34**	**0,73**	**0**	**0,00**	**2**	**0,06**	**11**	**0,24**	**47**	**0,32**
OTHER-REFERENCE – NON-INTEGRAL										
Smatrati	6	0,13	0	0,00	1	0,03	1	0,02	**8**	**0,05**

Pretpostaviti	1	0,02	0	0,00	1	0,03	2	0,04	**4**	**0,02**
TOTAL per section	**7**	**0,15**	**0**	**0,00**	**2**	**0,06**	**3**	**0,06**	**12**	**0,08**
TOTAL Other-reference	**41**	**0,89**	**0**	**0,00**	**4**	**0,13**	**14**	**0,31**	**59**	**0,41**
TOTAL all	**104**	**2,26**	**2**	**0,08**	**14**	**0,48**	**52**	**1,16**	**172**	**1,20**

Table B6

Overall distribution of the individual epistemic verbs in Crocor

EPISTEMIC VERB	Raw frequency	n/1000
pretpostaviti	89	0,62
smatrati	79	0,55
držati	2	0,01
vjerovati	1	0,006
razumjeti	1	0,006
misliti/sumnjati/dvojiti	0	0,00

Table B7

Raw and normalized frequencies of the epistemic-evidential verbs across IMRAD in Crocor

EPISTEMIC-EVIDENTIAL VERBS										
	INTRODUCTION		**METHOD**		**RESULTS**		**DISCUSSION**		**TOTAL per item**	
	Raw frequency	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**	**Raw frequency**	**n/1000**
Činiti se	11	0,23	1	0,04	3	0,10	28	0,62	**43**	**0,30**
Izgledati	0	0,00	0	0,0	0	0,00	1	0,02	**1**	**0,006**
TOTAL per section	**11**	**0,23**	**1**	**0,04**	**3**	**0,10**	**29**	**0,64**	**44**	**0,30**

Table B8

Normalized frequencies of the individual epistemic devices in Crocor

Epistemic device	Normalized frequency n/1000
Moći_indicative	**0,72**
Moći_conditional	0,51
Vjerojatno	0,28
Možda	0,08
Moguće	0,03
Plauzibilno	**0,006**
Moguće je (da)	0,47
Vjerojatno je (da)	0,04
Moguć	0,33
Vjerojatan	0,04
Mogućnost	0,13
Vjerojatnost	0,02
Smatrati	0,55
Pretpostaviti	0,62
Činiti se	0,30
Izgledati	**0,006**

Appendix C Obrazac molbe za sudjelovanje u intervjuu

Poštovani,

Doktorandica sam na poslijediplomskom studiju *Jezikoslovlje* na Filozofskom fakultetu u Osijeku i trenutačno pripremam doktorski rad pod nazivom *Epistemička modalnost u akademskom diskursu u hrvatskom i engleskom jeziku.* Jezični korpus rada čine odabrani izvorni znanstveni članci objavljeni u psihologijskim časopisima u razdoblju od zadnjih 10 godina. Tema rada odnosi se na uporabu jezičnih sredstava kojima se izražava određeni stupanj opreza i zadrške u iznošenju zaključaka, pretpostavki, izbjegavanja kategoričkih tvrdnji i sl. u znanstvenom stilu, a cilj je rada kontrastivnim pristupom istražiti vrstu i učestalost navedenih leksičkih sredstava u dva jezika. Riječ je o određenom pragmatičkom aspektu jezika u uporabi koji ukazuje da jezični izričaj u znanstvenom stilu nije u potpunosti objektivan, neutralan i lišen subjektivnosti kako se u tradicionalnim pristupima često opisuje. U dosadašnjim sličnim istraživanjima provedenim na raznim jezicima, ponajviše engleskom, lingvistička je analiza uglavnom bila potkrijepljena kvalitativnim istraživačkim metodama (upitnik ili polustrukturirani intervju) koje su uključivale same autore znanstvenih članaka. Drugim riječima, istražujući jezik u uporabi lingvisti su u interpretaciji značenja i motiviranosti uporabe navedenih jezičnih sredstava uključili stavove samih autora kako bi potkrijepili vlastitu interpretaciju i navode iz literature. Ukoliko pristajete da Vaš članak …. bude dio jezičnog korpusa ovog istraživanja, zamolila bih Vas da u članku u prilogu obilježite jezične konstrukcije pomoću kojih se u tekstu izražava oprez u iznošenju tvrdnji, pretpostavki ili implikacija pri čemu se na neki način izbjegavaju generalizirajući i kategorički stavovi te da mi potom isti članak pošaljete elektronskim putem. Nakon toga, zamolila bih Vas da se sastanemo (osobno ili elektronskim putem) kako bismo usmeno prokomentirali razloge i motivaciju za uporabu izdvojenih jezičnih konstrukcija i u tom smislu bih Vas molila na pristanak na snimanje našeg intervjua.

Napominjem da će se u radu svi Vaši komentari bilježiti anonimno. Također, naglašavam da je cilj rada jezična i pragmatička analiza kontekstualizirane uporabe određenog lingvističkog fenomena znanstvenog stila i s tim u vezi izjavljujem da neću interpretirati Vaše odgovore niti tekstove u cijelosti u smislu iznošenja osobnih (pozitivnih ili negativnih) prosudbi o njima. Budući da je riječ o istraživanju jezičnog fenomena u čijoj podlozi leži određena komunikacijska namjera, bila bih Vam iznimno zahvalna na sudjelovanju u ovom istraživanju jer bi izravan uvid u komunikacijsku namjeru Vas kao autora članka uvelike potkrijepio analizu jezičnih podataka i validnost cjelokupnog istraživanja. Očekivani doprinos ovog istraživanja je opis jednog dosada neistraženog jezičnog fenomena u hrvatskom znanstvenom stilu te se očekuje da će nalazi pružiti doprinos hrvatskom jezikoslovlju, ali istovremeno naći praktičnu primjenu među članovima šire akademske zajednice u pogledu akademskog pisanja na hrvatskom i engleskom jeziku. Također se očekuje da će nalazi istraživanja pridonijeti suvremenim kontrastivnim jezičnim istraživanjima ovog tipa u međunarodnom lingvističkom okruženju što je za male jezike kao što je hrvatski od velikog značaja. U nadi da ćete pozitivno odgovoriti na moju molbu za sudjelovanjem u istraživanju, unaprijed se zahvaljujem na Vašem vremenu. Ukoliko su Vam potrebne dodatne informacije o samom istraživanju, slobodno mi se obratite.

Mirna Varga, viša predavačica za engleski jezik

Katedra za zajedničke sadržaje,

Filozofski fakultet u Osijeku

Appendix D Request to participate in interview

Dear Professor,

My name is Mirna Varga and I am a teacher of English for Academic Purposes at the Faculty of Humanities and Social Sciences in Osijek, Croatia. I am also a PhD student at the Doctoral Study Programme in Linguistics at my Faculty and I am currently working on the PhD thesis called *Epistemic Modality in Academic Discourse in Croatian and English*. The linguistic corpus of the thesis is made of the Croatian and English original research articles published in psychology journals within the last 10 years. The topic of the thesis relates to the use of lexical devices whose main function is to indicate a certain degree of caution and reservation when drawing conclusions or making assumptions in scientific language. The study is basically focused on a particular pragmatic aspect of language in use which suggests that scientific language is not completely objective or neutral as it was assumed in more traditional approaches.

The aim of the thesis is a cross-linguistic analysis of the types and frequency of the lexical devices in the two languages. In similar research conducted on various languages, primarily English, linguistic analysis was mainly supported by the qualitative research methods (a questionnaire or a semi-structured interview) which involved the interviews with the authors of the articles themselves. In other words, the linguists involved writers' attitudes in order to account for the meaning and motivation for the use of such devices. If you agree that your article in attachment is examined for the purposes of this study, I would kindly ask you to underline in it all the lexical expressions (individual words, phrases, parts of sentences) used to indicate caution in presenting claims or to avoid too confident and direct statements or generalizations. When you are finished, please send the article back to me. After that, I would appreciate if we could meet online (via Skype) so as to discuss and comment on the reasons for the use of the selected lexical items. In addition, I would kindly ask you for your consent to record the conversation.

I would like to emphasize that all your comments will be presented anonymously in the thesis. I would also like to state that I will not interpret your responses or texts in terms of expressing personal judgments (positive or negative) about them. Since the dissertation deals with the linguistic phenomenon which bears on a certain communicative intention, I would be grateful if you would agree to participate in this study since a direct insight into your communicative intention as the authors of the articles would significantly support the analysis of linguistic data as well as the validity of the entire research. The expected contribution of this research is the account of the so far unexplored linguistic phenomenon in Croatian. Apart from its contribution to the Croatian linguistics, it is expected that the findings will contribute to the contemporary cross-linguistic research of the phenomenon in question which is extremely important for small languages such as Croatian. Furthermore, it is hoped that the findings may prove useful to Croatian psychologists who need to publish their articles in English.

I hope that you will respond positively to my request for the participation in this study and I wish to thank you for your time. If you need any additional information about the research itself, please do not hesitate to contact me.

Mirna Varga, EAP instructor

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14. List of CORACEN journals

14.1 List of Engcor journals

Developmental psychology

DP1 Abar, C. C., Jackson, M. K., & Wood, M. (2014). Reciprocal relations between perceived parental knowledge and adolescent substance use and delinquency: The moderating role of parent–teen relationship quality. *Developmental Psychology, 50,* 2176–2187. doi: 10.1037/a0037463

DP2 Bayliss, M. D., Jarrold, C., Baddeley, D. A., Gunn, M. D., & Leigh, E. (2005). Mapping the developmental constraints on working memory span performance. *Developmental Psychology, 41,* 579–597. doi: 10.1037/0012-1649.41.4.579

DP3 Gazelle, H., & Druhen, J. M. (2009). Anxious solitude and peer exclusion predict social helplessness, upset affect, and vagal regulation in response to behavioral rejection by a friend. *Developmental Psychology, 45,* 1077–1096. doi: 10.1037/a0016165

DP4 Johnson, W., McGue, M., & Iacono, G. W. (2009). School performance and genetic and environmental variance in antisocial behavior at the transition from adolescence to adulthood. *Developmental Psychology, 45,* 973–987. doi: 10.1037/a0016225

DP5 Madigan, S., Moran, G., & Pederson, R. D. (2006). Unresolved states of mind, disorganized attachment relationships, and disrupted interactions of adolescent mothers and their infants. *Developmental Psychology, 42,* 293–304. doi: 10.1037/0012-1649.42.2.293

DP6 Nosko, A., Tieu, T. T., Lawford, H., & Pratt, W. M. (2011). How do i love thee? Let me count the ways: parenting during adolescence, attachment styles, and romantic narratives in emerging adulthood. *Developmental Psychology, 47,* 645–657. doi: 10.1037/a0021814

DP7 Petersen, L. J., & Hyde, S. J. (2013). Peer sexual harassment and disordered eating in early adolescence. *Developmental Psychology, 49,* 184–195. doi: 10.1037/a0028247

DP8 Santesso, L. D., & Segalowitz, J. S. (2008). Developmental differences in error-related erps in middle- to late- adolescent males. *Developmental Psychology, 44,* 205–217. doi: 10.1037/0012-1649.44.1.205

DP9 Schofield, J. T., Conger, D. R., Martin, J. M., Stockdale, D. G., Conger, J. K., & Widaman, F. K. (2009). Reciprocity in parenting of adolescents within the context of marital negativity. *Developmental Psychology, 45,* 1708–1722. doi: 10.1037/a0016353

DP 10 Yibing, L., & Lerner, M. R. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47,* 233–247. doi: 10.1037/a0021307

Journal of Pesonality and Social Psychology

JPSP1 Collins, C. E., Percy, J. E., Smith, R. E., & Kruschke, K. J. (2011). Integrating advice and experience: Learning and decision making with social and nonsocial cues. *Journal of Personality and Social Psychology, 100,* 967-982. doi: 10.1037/a0022982

JPSP2 Côté, S., Piff, K. P., & Willer, R. (2013). For whom do the ends justify the means? Social class and utilitarian moral judgment. *Journal of Personality and Social Psychology, 104,* 490-503. doi: 10.1037/a0030931

JPSP3 Feinberg, M., Willer, R., & Keltner, D. (2012). Flustered and faithful: Embarrassment as a signal of prosociality. *Journal of Personality and Social Psychology, 102,* 81-97. doi: 10.1037/a0025403

JPSP4 Hutcherson, A. C., & Gross, J. J. (2011). The moral emotions: A social–functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology, 100,* 719-737. doi: 10.1037/a0022408

JPSP5 Neal, T. D., Wood, W., & Drolet, A. (2013). How do people adhere to goals when willpower is low? The profits (and pitfalls) of strong habits. *Journal of Personality and Social Psychology, 104,* 959–975. doi: 10.1037/a0032626

JPSP6 Pond, Jr., P. R., DeWall, C. N., Lambert, M. N., Deckman, T., Bonser, M. I., & Fincham, D. F. (2012). Repulsed by violence: Disgust sensitivity buffers trait, behavioral, and daily aggression. *Journal of Personality and Social Psychology, 102,* 175-188. doi: 10.1037/a0024296

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15. Summary

The present thesis is the result of a cross-cultural, genre-based study whose main objective is to examine how writers of research articles in psychology in Croatian and English use epistemic modality devices in hedging their claims or in evaluating other scholars' work. Based on the corpus of 60 research articles published in Croatian and English journals, the study aims to establish the patterns of similarities and differences in the use of the epistemic devices across the main rhetorical sections of a research article as well as to identify their major hedging functions.

The overall results show that English writers use epistemic markers more frequently than their Croatian counterparts. This finding is generally in line with the previous cross-cultural studies, showing a more salient use of hedges and their more entrenched status in the Anglo-American writing as compared to academic writing in some other languages investigated.

With respect to the individual categories of epistemic devices, the results show both similarities and differences in their uses across the two sub-corpora. In both the English and Croatian sub-corpus, epistemic modal verbs are employed most frequently, followed by epistemic verbs, while epistemic nouns are the least frequent category of epistemic devices. The major difference in the overall results concerns the distributional patterns in the use of epistemic devices. While epistemic modal verbs show a strikingly high frequency of occurrences as compared to other epistemic devices in the English corpus, the results of the frequency analysis of the Croatian corpus show that writers hedge their claims mostly by means of the modal verbs, epistemic verbs, and epistemic adverbs and particles, as attested by their overall similar frequencies.

With respect to the distribution of epistemic devices across the research article sections, both English and Croatian writers hedge their claims mostly in the Discussion, followed by the Introduction section, while the use of epistemic devices in the remaining two sections is significantly lower by comparison. Generally, this complies with the major rhetorical functions of the research article sections. Thus, the highest density of hedges in the Discussion reflects its major rhetorical functions primarily concerned with writers' interpretations and implications of the given research, which often requires a cautious and tentative use of language, shielding writers from the risks of negatibilty of the claims. By contrast, the use of hedges in the middle research article sections is less salient given their focus on the descriptive accounts of the methodological procedures and obtained findings.

Drawing on Hyland's (1998) polypragmatic model of scientific hedges, epistemic devices in both corpora are mostly concerned with the reliability type of hedges, concerned with indicating uncertainties towards the propositional content, signaling at the same time the extent to which the claims may be considered as accurate given the limited state of knowledge they are based on. In addition, epistemic markers may be used as writer-oriented hedges concerned with diminishing the writers' presence in the text, allowing them to maintain distance from the proposed claims. Finally, the use of epistemic verbs co-occurring with the 1st person plural pronouns is interpreted in the present study as a writer's strategic choice in foregrounding the epistemic stance. This use of epistemic devices is more frequent in the English as compared to the Croatian corpus, which is in line with some previous cross-cultural research, indicating that self-mention is a more prominent feature of the Anglo-American writing as compared to that in other languages.

In sum, the present findings provide an insight into the use of the epistemic language in the cross-cultural disciplinary writing and as such may be of particular use to the Croatian

speaking disciplinary scholars, students and all those interested in writing research articles in English. On a more general note, it is expected that the study may incite further research on academic writing conventions in Croatian or their comparison with those in English as a lingua franca of science.

Key words: academic discourse, research article, epistemic modality, hedge, English, Croatian

16. Sažetak

Cilj je rada istražiti kako autori znanstvenih članaka iz područja psihologije na hrvatskom i engleskom jeziku koriste sredstva epistemičke modalnosti da bi izrazili različiti stupanj sigurnosti prema iznesenim tvrdnjama te iskazali stav prema tvrdnjama drugih autora. Analiza se temelji na korpusu 60 znanstvenih članaka objavljenim u znanstvenim časopisima na hrvatskom i engleskom jeziku. Cilj je analize utvrđivanje sličnosti i razlika u uporabi i učestalosti sredstava epistemičke modalnosti u glavnim retoričkim segmentima znanstvenog članka te istraživanje njihovih pragmatičkih funkcija kao sredstava ograđivanja u znanstvenom tekstu.

Rezultati frekvencijske analize pokazuju veću zastupljenost sredstava epistemičke modalnosti u engleskom korpusu u odnosu na hrvatski, što je općenito u skladu s nalazima prethodnih međujezičnih istraživanja koja upućuju na učestaliju uporabu oznaka ograđivanja u akademskom stilu angloameričkog govornog područja u odnosu na akademske stilove pisanja u nekim drugim jezicima.

Rezultati pokazuju da su modalni glagoli najčešća gramatička kategorija epistemičkih sredstava u oba korpusa, dok su epistemički glagoli sljedeća kategorija po čestotnosti. U oba korpusa najmanju zastupljenost pokazuje uporaba epistemičkih imenica. Unatoč navedenim sličnostima, rezultati analize pokazuju na istaknutu uporabu modalnih glagola u engleskom korpusu, dok učestalost ostalih sredstava epistemičke modalnosti ne pokazuje drastična odstupanja. Rezultati analize hrvatskog korpusa pokazuju da se najčešća sredstva grupiraju oko modalnih glagola, epistemičkih punoznačnih glagola te modalnih priloga i čestica, dok su ostala sredstva značajno manje zastupljena.

Nalazi analize ukazuju da se u oba korpusa oznake ograđivanja najviše koriste u Raspravi, manje u Uvodu, dok je značajno manja učestalost zabilježena u Metodi i Rezultatima. Najveća zastupljenost oznaka ograđivanja u Raspravi ukazuje na autorovu potrebu iskazivanja opreza i odmaka u tumačenju nalaza istraživanja i pokušajima izvođenja zaključaka, što proizlazi iz svijesti o različitim ograničenjima istraživanja koja često ne dozvoljavaju iskazivanje visokog stupnja sigurnosti u iznošenju stavova. Manja zastupljenost oznaka ograđivanja u središnjim segmentima članka odražava njihovu primarnu usmjerenost na opise metodoloških postupaka i rezultata, što u pravilu ne zahtijeva izraženiju uporabu oznaka ograđivanja.

U odnosu na Hylandov (1998) polipragmatički model ograđivanja u znanstvenom tekstu, rezultati pokazuju da se sredstva epistemičke modalnosti najčešće koriste za iskazivanje nižeg stupnja sigurnosti u odnosu na sadržaj tvrdnje, upućujući pritom da se iste mogu smatrati pouzdanim u okvirima postojećeg, često ograničenog, znanja na temelju kojeg se izvode. Osim na propozicijski sadržaj, pragmatičke funkcije epistemičkih sredstava mogu biti usmjerene i na autora, pri čemu se umanjuje njegova prisutnost u tekstu te omogućuje zadržavanje većeg odmaka od iznesenih tvrdnji. Naposlijetku, uporaba prvog lica i punoznačnih epistemičkih glagola u ovom se radu smatra autorovim izborom s ciljem isticanja osobnog epistemičkog stava. Rezultati pokazuju da je navedena uporaba epistemičkih sredstava učestalija u engleskom korpusu, što je općenito u skladu s nekim prethodnim međujezičnim istraživanjima koja ukazuju da je prisutnost autora istaknutija konvencija angloameričkog akademskog stila pisanja u odnosu na iste u nekim drugim istraživanim jezicima.

Zaključno, pretpostavlja se da bi uočene specifičnosti u uporabi sredstava epistemičke modalnosti u psihologijskim člancima u engleskom i hrvatskom jeziku mogle koristiti

predmetnim stručnjacima, studentima i svima onima koji počinju pisati ili već imaju iskustvo pisanja znanstvenih članaka kako na hrvatskom, tako i na engleskom jeziku. Očekuje se da bi postojeće istraživanje moglo potaknuti daljnja istraživanja konvencija akademskog pisanja, kako hrvatskog jezika, tako i njihove usporedbe s engleskim jezikom kao globalnim jezikom znanosti.

Ključne riječi: akademski diskurs, znanstveni članak, epistemička modalnost, oznaka ograđivanja, engleski, hrvatski

17. Biography

Mirna Varga was born in Osijek on 29 December in 1974. She finished grammar school in Osijek and enrolled at the then Faculty of Pedagogy in Osijek, from which she graduated in 1999 with a degree in English language and literature and German language and literature. For several years she worked as an English language teacher at secondary schools in Osijek and Vukovar as well as at the Foreign Language Schools in Osijek where she taught English to learners of different age groups. In 2005 she was employed as an English language instructor at the Faculty of Philosophy, Department of Common Courses. Since then she has been teaching various core and elective English courses at the undergraduate studies of psychology, and at the undergraduate and graduate studies of information sciences, and German language and literature. In 2006, she enrolled the PhD studies in Linguistics at the Faculty of Humanities and Social Sciences in Osijek. Her major interests include teaching English for Academic Purposes and academic writing. She has authored and co-authored several papers and has delivered talks at several domestic and international conferences.