Lietuvių kalba 11, 2017, www.lietuviukalba.lt ISSN: 1822-525X

THE NECESSITIVE IMPERSONAL *REIK(Ė)TI* 'NEED': THE RISE OF MODAL MEANING[1]

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Introduction

Modality, one of the widely discussed issues in linguistics, has generally been considered as a semantic category. There are two major approaches to the definition of modality: it is defined either in terms of 'speaker attitudes', 'subjectivity' (Palmer 1990, 2001; Traugott 1989, 2006) or in terms of 'factuality', 'actuality', 'reality' (Narrog 2005, 2012). Since modality is a heterogeneous category, it comprises several subcategories or types. Typically, scholars distinguish either two (for example, epistemic and deontic (Lyons 1977), epistemic and root (Coates 1983)) or three types of modality (epistemic, deontic and dynamic) (Palmer 1990).

One more perspective is offered by van der Auwera and Plungian (1998) who distinguish between epistemic and non-epistemic modality, which is further subdivided into participant-internal and participant-external modality. Participant-internal modality is defined as "a kind of possibility or necessity internal to a participant engaged in the state of affairs" (1998, 80) and is exemplified by (1a-1b):

(1a) *Boris* ***can*** *get by with sleeping five hours a night.*

(1b) *Boris* ***needs*** *to sleep ten hours every night for him to function properly.*

(van der Auwera and Plungian 1998, 80)

Participant-external modality "refers to circumstances that are external to the participant, if any, engaged in the state of affairs and that make this state of affairs either possible or necessary" (1998, 80). It covers two subdomains, i.e. deontic and non-deontic participant-external modality.

[1] We wish to thank Aurelija Usonienė and Jurgis Pakerys for very useful comments on an earlier version of the text. We are also grateful to two anonymous reviewers for their comments that helped to improve the paper. The research has been funded by the Research Council of Lithuania within the framework of project MIP-062/2014 (*Modality and Evidentiality in the Lithuanian Language*).

Deontic modality "identifies the enabling or compelling circumstances external to the participant as some person(s), often the speaker, and/or as some social or ethical norm(s) permitting or obliging the participant to engage in the state of affairs" (1998, 81). Thus, while in the case of non-deontic participant-external modality (exemplified by 2), the modal source is general circumstances external to the participant or to the speaker, in the case of deontic modality the modal source exclusively coincides with the speaker or some social or ethical norm (3):

(2) *To get to the station, you* ***can / have to*** *take bus 66.*

(van der Auwera and Plungian 1998, 80)

(3) *John* ***may / must*** *leave now.*

(van der Auwera and Plungian 1998, 81)

In their study, van der Auwera and Plungian (1998, 111) also propose modality's semantic map covering three spheres: pre-modal, modal and post-modal. The semantic map indicates that in many languages modal markers are polysemous or multifunctional. Polysemy (or multifunctionality) is usually thought of as a result of meaning change and meaning extension. The most frequently mentioned 'processes' or 'mechanisms' of change that lead to the formation of new meanings are considered to be, among others, metaphorization, metonymization, conversational implicature, subjectification (Sweetser 1990; Traugott and Dasher 2002, among others). During these processes, linguistic elements of one type of modality can acquire features of other types of modality; for example, dynamic elements adopt deontic functions, deontic elements adopt epistemic or even non-modal functions, etc. At the same time modal items can lose some of their semantic components and, as a consequence, undergo semantic bleaching as it is understood by Lehmann (1995) or experience semantic shift from one conceptual domain into another (Hansen 2004, 261). In the latter case, modal items typically retain their lexical (or premodal) meanings alongside modal ones.

The shift from root or deontic meaning to epistemic meaning in modal verbs has attracted a lot of scholarly attention and has been described in terms of subjectification (Traugott 1989; Nordlinger and Traugott 1997; Traugott and Dasher 2002; Traugott 2006). According to Traugott (1989), subjectification involves not only shifts from deontic obligation to epistemic attitude but also shifts from less to more subjectively construed obligation. In other words, subjectification is the process by which "meanings become increasingly based in the speaker's subjective belief state/attitude towards the proposition" (Traugott, 1989, 35).

Besides the mechanisms of semantic change mentioned above, a large body of literature (e.g. Traugott 1989; Traugott and Dasher 2002; Bybee 2011; Narrog 2012) emphasizes that meaning change, and especially change involving grammatical (resp. modal) meaning, takes place in discourse, i.e. in the process of creating and interpreting meanings in specific contexts. According to Traugott (2006, 112), the following context variables can be important for the development of modal meaning:

- the subject of the modal verb (1st, 2nd or 3rd person; animate or inanimate);
- the semantics of the complement verb, its grammatical features (tense or aspect);
- other formal features, such as negation markers or modal adverbs.

There are numerous studies discussing the emergence of modal auxiliaries in English according to the contextual factors mentioned above (Krug 2000; Traugott and Dasher 2002; Narrog 2012, among others). However, there are much fewer studies on the development of modal verbs in languages other than English. A case in point is Lithuanian; there is not much empirical research which investigates the historical evolution of modal verbs. The present study therefore attempts to examine changes in the semantic profile of the Lithuanian impersonal necessitive verb *reik(ė)ti* 'need' and to explain the processes that are crucial for the rise of modal meanings. The study employs van der Auwera and Plungian's (1998) framework of modality as well as the notion of subjectivity and subjectification (Traugott 1989).

General characteristics of Lithuanian modal verbs

The development of modal verbs across languages is generally considered a typical case of the grammaticalization process. The Lithuanian modal verbs are not as grammaticalized as the English ones, and there are no auxiliary modal verbs in Lithuanian; however, grammarians distinguish between personal and impersonal lexical verbs used to express various modal meanings (Balkevičius 1998). As has been observed by Holvoet (2007, 2009), Lithuanian modal verbs do not form a clear-cut or closed class and do not have a set of morphological and syntactic properties that distinguish them from lexical verbs. The majority of Lithuanian modal verbs, except the verbs *galėti* 'can/may/could/might' and *privalėti* 'must', are said to retain their lexical meanings alongside the modal ones. Moreover, they do not demonstrate any sign of phonetic attrition and do not develop into grammatical markers (affixes). They can be inflected for all tense and participle forms as well as undergo nominalization and form other derivatives. The fact that the majority of Lithuanian modal verbs (except the modal verbs *galėti* 'can/may/could/might' and *turėti* 'have to') have not developed any epistemic meanings would also support the claim that there is a low(er) degree of grammaticalization in Lithuanian modal verbs (cf. Holvoet 2007; Usonienė and Jasionytė 2010; Jasionytė-Mikučionienė 2014).

It is generally accepted in linguistic literature that, cross-linguistically, the main source of modal verbs of possibility is the lexical domain of knowledge and power or strength, while the source of modal verbs of necessity is the domain of possession or the domain of need (cf. Bybee et al. 1994; van der Auwera and Plungian 1998). The Lithuanian language also demonstrates these universal paths of semantic development: a full verb denoting both epistemic (4) and non-epistemic (5) possibility is the verb *galėti* 'can/may/could/might' that is related to the noun *galia* 'power':

(4)	*Šiandien*	***gali***	*snigti.*[2]
	today	can.PRS.3	snow.INF
	'It may snow today.'		

(5)	***Gali***	*eiti*	*namo.*
	can.PRS.2SG	go.INF	home
	'You may go home.'		

The full verb of possession *turėti* 'have to' is used to express epistemic (6) and non-epistemic (7) necessity:

(6)	*Jis*	*jau*	***turi***	*būti*	*namie.*
	he.NOM	already	must.PRS.3	be.INF	at.home
	'He must be at home already.'				
(7)	***Turiu***	*eiti.*			
	have.PRS.1SG	go.INF			
	'I have to go.'				

The modal verb *reik(ė)ti* 'need' can only convey non-epistemic necessity. It appears in impersonal constructions where the agent is encoded in the dative and the verb is followed by the infinitive. Only the 3rd person forms of the verb *reik(ė)ti* 'need' are found in impersonal constructions. Besides modal meanings, *reik(ė)ti* 'need' can also realize non-modal semantics, where the verb denotes the state of the referent of the dative argument: the (non-)human referent refers to the locus of internal compulsion, e.g.:

[2] If no source for the provided example is indicated, it means that the example is constructed.

(8)	*Man*	***reikia***	*atostogų.*
	I.DAT	need.PRS.3	holiday.GEN.PL
	'I need a holiday.'		

The non-modal uses of the verb occur only in cases when it is followed by the noun phrase. In such cases, the dative referent experiences an internal need for some entity, realized in the genitive.

The constructions with the *need* verbs are widespread in the circum-Baltic area (namely, in Slavonic and Balto-Finnic languages; cf. Hansen and de Haan 2009). Typically, their grammatical subject is coded in the dative or another oblique case. This structural restriction is backed up by certain semantic constraints: impersonal modals tend to be restricted to non-epistemic modality, or, in some languages, only to non-epistemic necessity (cf. Besters-Dilger et al. 2009, 189; also Loureiro-Porto 2009, 3). Previous studies have yielded important clues as to the origin of the necessitive impersonal constructions based on the *need* verbs in the circum-Baltic languages (see Wälchli 1996, 2000; Heine and Kuteva 2005; Nau 2012; Jasionytė 2012, Jasionytė-Mikučionienė 2014). These constructions are said to be "characteristic to the [language] systems, it is an old inherited feature that arises again and again with different lexical material" (Nau 2012, 495). However, previous studies most often concentrate on the synchronic features of *reik(ė)ti* 'need' rather than on its historical evolution. Thus, as has been mentioned, the focus of the present study is on the semantic changes undergone by the verb *reik(ė)ti* 'need' and on the processes that are crucial for the rise of modal meanings. The analysis of the use of the verb *reik(ė)ti* 'need' is based on corpus data from both old Lithuanian and contemporary Lithuanian. The synchronic analysis is based on several discourse types (fiction and academic discourse) to reflect a broader perspective on the frequency and the range of the modal meanings that the verb conveys.

Data and methods

The study employs a number of corpora to investigate the frequency, distribution and the range of meanings that *reik(ė)ti* 'need' conveys from both diachronic and synchronic perspectives. Old written Lithuanian texts (16th-17th centuries) were used to investigate the semantic and pragmatic profile of *reik(ė)ti* 'need' in the earlier stages of Lithuanian. The concordances of the old Lithuanian texts were extracted from the Database of Old Writings compiled at the Institute of the Lithuanian Language[3]. It must be noted that the analysis of the semantic development of Lithuanian modal verbs is rather problematic since the majority of old Lithuanian texts are not original ones and they are written in different language variants. However, the study uses the most representative sources

[3] http://www.lki.lt/seniejirastai/

available for the detailed analysis of *reik(ė)ti* 'need', i.e. Jonas Bretkūnas' *Postilė* (1591), Mikalojus Daukša's *Postilė* (1599) and *Punktai sakymų* by Konstantinas Sirvydas (1629 (Part I) and 1644 (Part II)). *Postilė* by Jonas Bretkūnas is the first printed collection of Lithuanian sermons, which includes the author's original texts and texts compiled from other sources with the author's comments. Mikalojus Daukša's *Postilė* is a translation from Polish, while *Punktai sakymų* by Konstantinas Sirvydas is a collection of his sermons in Lithuanian. Despite the fact that not all old Lithuanian writings are originals, this is the only data available for the analysis of the earlier stages of Lithuanian. The research on modal verbs in other languages is not always based on authentic data too (cf. Tragel and Habicht 2012). Therefore, at least tentative observations can be made on the trends of the semantic development of *reik(ė)ti* 'need' based on the early Lithuanian data that we could access.

For the synchronic analysis, the data is drawn from two large representative corpora of authentic Lithuanian: the Corpus of the Contemporary Lithuanian Language (CCLL)[4] and the Corpus of Academic Lithuanian (CorALit)[5]. With roughly 160 million words, CCLL is a representative corpus for the study of contemporary Lithuanian. The corpus contains the sub-corpora of newspaper texts (63.8%), non-fiction books (14.2%), fiction books (11.6%), documents (10%) and spoken language texts (0.3%). The analysis of *reik(ė)ti* 'need' is based on the sub-corpus of fiction from CCLL. CorALit (about 9 million words) is a representative synchronic corpus of the written academic Lithuanian language. The corpus includes texts published between 1999 and 2009 in five broad science areas (the humanities, the social sciences, the biomedical sciences, the technological sciences and the physical sciences). Each science area is represented by a variety of different genres, such as research articles, monographs, textbooks, reviews, etc. (for a more detailed description of the main features of the CorALit compilation and design see Usonienė et al. (2011)).

The sub-corpora of the humanities and the biomedical sciences were selected for the present study to enable comparison between different fields of academic practice. Texts from arts, philosophy, linguistics, history, theology, literary science, etc. comprise the sub-corpus of the humanities. The biomedical sciences section of CorALit includes texts mainly from agriculture, medicine, veterinary medicine, zootechnics and ecology.

The overall number of words used for the synchronic analysis is more than 22 million words (see Table 1).

Table 1. *The number of words in the analyzed sub-corpora*

[4] http://tekstynas.vdu.lt/
[5] http://coralit.lt/

Sub-corpora	Number of words
CCLL: Fiction	18 461 597
CorALit: Biomedical sub-corpus	1 638 444
CorALit: Humanities sub-corpus	2 028 906
Total:	22 128 947

The analysis of *reik(ė)ti* 'need' is a corpus-based study which employs both quantitative and qualitative approaches. The first part of the analysis focuses on the overall distribution of *reik(ė)ti* 'need' and its forms across different time periods and different types of discourse. The most frequent morphological forms of the impersonal *reik(ė)ti* 'need' were retrieved automatically from the synchronic corpora and the numbers were normalized to 10 000 words to allow a valid frequency comparison among the sub-corpora of different sizes. The most frequent collocations were examined using concordancing software WordSmith Tools 5.0 (Scott 2008). In order to evaluate the statistical significance of frequency data, the log likelihood (LL) test[6] was performed with the significance level set at $p<0.05$, critical value = 3.84.

It should be noted that to provide normalized frequency for the forms of *reik(ė)ti* 'need' found in old Lithuanian texts was not possible. First of all, not all texts are available in electronic format: a case in point is *Postilė* by Jonas Bretkūnas, which is not digitised. As a result, the overall length of the manuscript in words is not available and for the analysis the manuscript had to be read manually to identify all forms of *reik(ė)ti* 'need'. Secondly, even though some old Lithuanian texts are digitised, they contain various characters (for example, hyphenation marks) that are counted as separate words by word count programs; as a result, the overall number of words provided automatically would be inevitably skewed.

The second part of the study focuses on the qualitative analysis which explores the range of meanings that the most frequent[7] present tense form of the verb *reikia* 'need.PRS.3' conveys in different time periods. The following abbreviations for the old Lithuanian texts will be used throughout the article: BP for Jonas Bretkūnas' *Postilė* (1591), DP for Mikalojus Daukša's *Postilė* (1599) and PS for *Punktai sakymų* by Konstantinas Sirvydas (1629 (Part I) and 1644 (Part II). The examples quoted in the paper are coded using the abbreviation of the sub-corpus as follows: OLW (Old Lithuanian Writings), CCLL-Fict (Fiction sub-corpus of CCLL), CorALit-H (the humanities sub-corpus of CorALit), CorALit-B (the biomedical sciences sub-corpus of CorALit).

[6] For further information on the log-likelihood calculation see http://ucrel.lancs.ac.uk/llwizard.html.
[7] For frequency data see Table 2 and Table 6.

Results and discussion

1. *Reik(ė)ti* 'need' in OLW: quantitative analysis

It must be mentioned that instead of the contemporary verb *reik(ė)ti* 'need', in many cases the old Lithuanian language uses the predicative construction with the copular *būti* 'be.INF' and the form *reikia*[8] 'need', e.g.:

(9) ***Rêikę*** ***bů*** *kęntét'.* (DP 194,25)
need be.PST.3 suffer.INF
'[He] had to suffer.'

The form *reikia* 'need' in the contemporary language is interpreted as the 3rd person present tense form of the modal verb *reik(ė)ti* 'need', while in OLW it can be interpreted as a verbal form and as a nominal form. The modal expressions of non-verbal origin are characteristic of the Slavonic languages too (Hansen 2004, 250). Thus, the fact that the predicative constructions under discussion are common in DP, can be explained by two hypotheses: on the one hand, having in mind that DP is a translation from Polish, one could assume that the predicative construction with the copular *be* might have been patterned after an analogous source construction. On the other hand, the predicative constructions with *būti* 'be' have been attested in other old Lithuanian texts as well (e.g. in the translations from Dutch; see Holvoet 2007, 47). On the basis of the resemblance, Holvoet establishes the preliminaries for the common non-verbal origin of the modal expressions in the Baltic as well as Slavonic languages (ibid.). Hence, in the 16th century, the verb *reik(ė)ti* 'need' might have been already emanating from the source copular construction and as a consequence, might have been used with the predicative construction interchangeably.

Table 2 gives the results of the frequency analysis of *reik(ė)ti* 'need' including the verbal form and the predicative construction as well as both negative and positive forms. We employ the cover term 'form' as an inclusive term for the cases of *reik(ė)ti* 'need' used both in its verbal form and in the predicative construction.

Table 2. *Frequency of different grammatical forms of* reik(ė)ti 'need' *in the OLW sub-corpus*

Different forms of *reik(ė)ti*	# n	%

[8] In old Lithuanian texts the form *reikia* 'need' is found in different variants: either *reikia*, *reike* or with the nasal letters *ą*, *ę* as *reikią*, *reikę*. As a consequence, it can be interpreted as a noun or as a participal, or even as a decategorized form like *trzeba* 'need' in Polish or *nado* 'need' in Russian (Holvoet, p.c.). For this reason, the form *reikia* 'need' is not grammatically glossed in the analysis of the old Lithuanian data.

‘need’		
Present tense	326	89.6%
Past tense	16	4.4%
Past frequentative tense	0	0%
Subjunctive	19	5.2%
Future tense	3	0.8%
Total:	364	100%

With nearly 90% of all the occurrences of *reik(ė)ti* ‘need’ the present tense forms are predominant in OLW. The past tense and subjunctive forms share the remaining 10% of use of *reik(ė)ti* ‘need’, whereas the future tense forms are virtually non-existent. There were no cases of *reik(ė)ti* ‘need’ in the past frequentative tense use.

The distribution of positive and negative forms of *reik(ė)ti* ‘need’ is provided in Table 3.

Table 3. *Frequency of positive and negative forms of* reik(ė)ti ‘need’ *in the OLW sub-corpus*

Forms of *reik(ė)ti* ‘need’	OLW sub-corpus	
	# n	%
Positive forms	307	84.3%
Negative forms	57	15.7%
Total:	364	100%

As can be seen from Table 3, the positive forms prevail over the negative ones. There could be several reasons for this distribution. First of all, as has been mentioned, the form *reikia* ‘need’ in OLW occurs either as the 3rd person form of the verb *reik(ė)ti* ‘need’ or as the nominal form *reikia* ‘need’, which could be the reason of the higher frequency of the form *reikia* ‘need’ in positive contexts. Secondly, based on cross-linguistic data, Bybee et al. (1994, 230; 237) observe that grammatical meanings tend to initially arise in the affirmative contexts, which leads to the affirmative forms being more multifunctional (i.e. carrying non-modal as well as modal meanings) than the negative ones. This observation could be applied to the Lithuanian data as well and explain the higher frequency of the positive forms.

2. *Reik(ė)ti* ‘need’ in OLW: qualitative analysis

As the number of occurrences of *reikia* 'need' found in the old Lithuanian texts was relatively small (364 occurrences in total), all of them were included in the qualitative analysis. It has already been mentioned in the introduction that for the classification of modal meanings conveyed by the verb *reikia* 'need' we use the framework of modality proposed by van der Auwera and Plungian (1998).

It has been observed in the literature (cf. Heine 1993) that modal meanings (i.e. more abstract meanings) arise from the source concept that has a more concrete meaning. The pre-modal meaning of *reikia* 'need' concerns the internal need or necessity for some entity and may be paraphrased as 'someone needs something or someone is in need', e.g.:

(10)	*neſa*	*iemus*	***reik***	*pamokſlo...* (BP I 165, 12)
	since	they.DAT	need	sermon.GEN
	'Since they need a sermon.'			

The meaning under discussion is considered to be non-modal since the dative referent experiences a need for some entity and not for some state of affairs as in the case of modal meanings. In this case, *reikia* 'need' takes the object in the genitive. The required entity can be both concrete and abstract, i.e. *reikia* 'need' can be combined with either concrete or abstract nouns.

The internally motivated meaning is further extended to the participant-external domain of necessity. Here *reikia* 'need' functions as a marker of deontic necessity and indicates that the Experiencer is obliged by an external authority to undertake the action:

(11)	***Reikia***		*tíkéṫ*	*ir*	*ne maź*	*ne abęioṫ*
	need		believe.INF	and	not	NEG.doubt.INF
	ioġ	*Diéwas*		*yrá.* (DP 222,51)		
	that	God.NOM	be.PRS.3			
	'We have to believe in God and have no doubts about his existence.'					

In (11), the external authority coincides with the set of religious rules: everybody needs to behave according to the religious convention or to God's will. This meaning of *reikia* 'need' is most evident when the impersonal modal construction with *reikia* 'need' occurs in the clauses subordinated to the main predicate of speaking or thinking or co-occurs with other deontic modal markers as in (12):

(12)

Eſch	*eſmi*	*didʒios*	*Gimines /*	*didʒio*	*Pono*
I.NOM	be.PRS.1SG	great.GEN	family.GEN	great.GEN	lord.GEN
waikas /	*man*	***nereik /***	*man*	***nepriwalu***	***ira***
kid.NOM	I.DAT	NEG.need	I.DAT	NEG.obligatory	be.PRS.3
dirpti. (BP II 275, 20)					
work.INF					

‘I am from a noble family, I am a child of a great Lord, I don’t need to and don’t have to work.’

What is more, the deontic interpretation of *reikia* ‘need’ arises in a prototypical deontic context: the Experiencer has human reference (i.e. is animate) and the complements of *reikia* ‘need’ denote dynamic actions (‘believe’ or ‘not to have any doubts’ in (11) and ‘work’ in (12)). In other words, the dative arguments with human reference are semantically determined by the embedded active infinitives.

Reikia ‘need’ expresses participant-external necessity in such semantic contexts when circumstances or some external condition make it necessary for the Experiencer to perform an action, e.g.:

(13)

O	*teiṗ*	*id□nt’*	*ʒmónes*	*ne pamirt□*	*kitaiṗ*	*ne gal’*
	ADV	that	people.NOM	NEG.die.SUBJ	ADV	NEG.can.PRS.3
but’	*tiektái*	***reikia***	*id□nt’*	*grúdas*	*inġ*	*ʒiam□*
be.INF	only	need	that	grain.NOM	to	earth.ACC
□meſtas	*but□.* (DP 487,1-2)					
throw.PTCP	be.SUBJ					

‘The only thing for people to do in order to stay alive is to sow the seed into the soil.’

Here the situation expressing necessity appears in the subordinate clause with the complementizer *idant* ‘that’. The necessity of sowing is not related to the religious external authority, but springs from the external circumstances.

As has been observed, the dative argument of *reikia* ‘need’ (i.e. the Experiencer) can be overt or remain unexpressed. In most instances *reikia* ‘need’ does not occur with an overtly expressed Experiencer, however, in many cases the Experiencer may be recovered from the context.

Table 4 shows the range of meanings conveyed by *reikia* ‘need’ in OLW.

Table 4. *Distribution of meanings conveyed by* reikia 'need' *in the OLW sub-corpus*

Meaning conveyed by *reikia* 'need'	OLW	
	#n	%
Deontic necessity	184	65.9%
Participant-external necessity	31	11%
Non-modal	64	23%
Ambiguous	2	0.1%

As can be seen, deontic necessity is the dominant modal sense of *reikia* 'need' (65.9% of its overall use), followed by non-modal uses of the verb (23% respectively) and participant-external necessity (11%). Such distribution of meanings could be expected as the contexts in which *reikia* 'need' is found are predominantly religious: the addresser reports the set of rules of behaviour established by religious practices. Participant internal modality, distinguished by van der Auwera and Plungian (1998), has not been attested in the old Lithuanian data.

3. *Reik(ė)ti* 'need' in contemporary Lithuanian: quantitative analysis

Table 5 presents frequency information on all the positive and negative morphological forms of *reik(ė)ti* 'need' (excluding the participial ones) in different sub-corpora of contemporary Lithuanian.

Table 5. Frequency of reik(ė)ti 'need' *in the sub-corpora of contemporary Lithuanian*

Sub-corpora	*reik(ė)ti* 'need'	
	# n	f/10 000
CCLL: Fiction	31 984	17.3
CorALit: Biomedicine	1 292	7.9
CorALit: Humanities	1 971	9.7
Total:	35 247	15.9

We can immediately see from Table 5 that *reik(ė)ti* 'need' is much more frequent in the fiction sub-corpus than in the academic texts of both science fields. Most of the occurrences of the verb under analysis are found in dialogues in the fiction sub-corpus. This is not surprising as the impersonal necessitive construction allows the speaker to sound less imposing while placing a recommendation or obligation on the addressee. A relatively low degree of directivity of the impersonal *reik(ė)ti* 'need', especially when it is used with a covert dative subject, explains the high frequency of the verb in fiction, especially in predominantly frequent dialogic settings.

Two kinds of insights emerge from the quantitative results across the academic sub-corpora. Firstly, there is a statistically significant difference in the use of *reik(ė)ti* 'need' in the two science fields, with scholars in the biomedical sciences significantly underusing[9] the verb under study in comparison to the scholars of the humanities (LL= -34.40). In her analysis of the use of deontic modals in research writing, Giltrow (2005) notes their importance in creating common ground, a shared sense of community as well as the strengthened image of the writer as an expert. All these elements are especially important in the discursive and interpretative field of the humanities, where according to Hyland (2008, 13), "[p]ersonal credibility, getting behind your arguments, plays an important part in creating a convincing discourse".

The second insight derives from the comparison of the frequency of *reik(ė)ti* 'need' and another necessitive modal verb, *turėti* 'have to'. Previous studies (Šinkūnienė and Van Olmen 2012; Šinkūnienė 2015) show that *turėti* 'have to' is fairly frequent in Lithuanian academic discourse: the frequency of the modal *turėti* 'have to' is 12.80 and 9.09 occurrences per 10 000 words in the humanities and biomedical sciences respectively (Šinkūnienė 2015).[10] As a result, we can say that there seems to be a clear division of labour between the necessitive *turėti* 'have to' and *reik(ė)ti* 'need' to express deontic or participant-external/internal semantic content in academic discourse.

The next stage of the quantitative analysis was to evaluate the frequency of different tense forms (both positive and negative) of modal and non-modal *reik(ė)ti* 'need' across the three sub-corpora. The impersonal modal under study has five tense forms, the distribution of which shows some similarities and some differences (see Table 6).

Table 6. *Frequency of different forms of* reik(ė)ti 'need' *in the sub-corpora of contemporary Lithuanian*

Different forms of *reik(ė)ti* 'need'	CCLL: Fiction			CorALit: Biomedicine			CorALit: Humanities		
	# n	f/10 000	%	# n	f/10 000	%	# n	f/10 000	%

[9] The terms *underuse* and *overuse* are used here purely from a quantitative frequency perspective.

[10] The study gives general frequency information on the modal *turėti* 'have to' without separating epistemic and non-epistemic uses of the verb. However, previous studies (Šinkūnienė and Van Olmen 2012) suggest that *turėti* 'have to' conveys the meaning of epistemic necessity in Lithuanian academic discourse very infrequently, so we can assume that the modal use of the verb is mainly non-epistemic.

ne-reik-ia (3PRS)	19 001	10.3	59.4%	942	5.8	73%	1 263	6.2	64%
ne-reik-ėjo (3PST)	6 288	3.4	19.7%	61	0.4	5%	218	1.1	11%
ne-reik-(ė)davo (3FRQ)	416	0.2	1.3%	5	0.03	0%	13	0.1	1%
ne-reik-(ė)tų (3SUBJ)	3 383	1.8	10.6%	262	1.6	20%	434	2.1	22%
ne-reik-(ė)s (3FUT)	2 896	1.6	9%	22	0.1	2%	43	0.2	2%
Total:	31 984	17.3	100%	1 292	7.9	100%	1 971	9.7	100%

The first similarity across different sub-corpora is that the present tense form is the most frequent form of *reik(ė)ti* 'need' employed in both fiction and academic texts. The second similarity is that the use of the frequentative tense is extremely rare in all the three sub-corpora, whereas the frequency counts for the future tense forms are also quite small, especially in the academic domain. We might recall that similar tendencies of the distribution of different forms of *reik(ė)ti* 'need' have been observed in old Lithuanian texts.

In the fiction sub-corpus, the second frequent form is the past tense form. The popularity of the past tense form might be explained by its diverse functional capacity. In some cases, past tense forms, alongside the past-time reference, carry a counter factual meaning, as in (14):

(14) *Geriau tau* ***reikėjo*** <need.PST.3> *likti pas Čiužun. Gal ji būtų tave nusigabenusi į Kiniją?*

'You **should** have stayed at Čiužun's place. Maybe she would have taken you to China?'

(Jasionytė 2012, 216)

The past tense form is also used in the humanities sub-corpus, mainly because of the history texts which describe obligations of the past. The key difference in the analysed discourse domains lies in the use of the subjunctive. While it is only third in frequency in the fiction sub-corpus, it is the second most frequently used tense form in the texts of both science fields. The deontic subjunctive form of *reik(ė)ti* 'need' represents a hedged form of necessity. Even though Lithuanian scholars hedge less in comparison to, for example, English native speaking researchers (Šinkūnienė 2011), it seems that when it comes to placing obligation or offering a recommendation a hedged form of *reik(ė)ti* 'need' is not avoided in Lithuanian academic discourse, and its function is apparently to diminish the imposition on the addressee.

Finally, we have also looked into the distribution of positive and negative forms of *reik(ė)ti* 'need' in the three sub-corpora (Table 7).

Table 7. *Frequency of all positive and negative forms of* reik(ė)ti 'need' *in the sub-corpora of contemporary Lithuanian*

Forms of *reik(ė)ti* 'need'	CCLL: Fiction		CorALit: Biomedical		CorALit: Humanities	
	# n	%	# n	%	# n	%
Positive forms	25 532	80%	1 197	93%	1 819	92%
Negative forms	6 452	20%	95	7%	152	8%
Total:	31 984	100%	1 292	100%	1 971	100%

The frequency data shows a similar tendency for the positive forms of *reik(ė)ti* 'need' to dominate over the negative forms; this tendency has not changed much from the usage of the verb in the previous centuries (see Table 3). What should be noted though is that the percentage of the negative forms is higher in fiction than in both sub-corpora of academic language. Such quantitative distribution may be explained by the fact that in fiction the negative form *nereikia* 'NEG.need.PRS.3' seems to have a rich semantic pragmatic texture. Alongside the more or less neutral negation of obligation, the negative forms in the fiction sub-corpus also extensively display a much stronger semantic element of prohibition as in the example below:

(15) – *Aš tave palydėsiu.* – ***Nereikia*** <NEG.need.PRS.3>*! – staiga ryžtingai paprieštaravo ji.*
'I will accompany you', he said. '**No need**,' suddenly she snapped.'
(Jasionytė 2012, 219)

The distribution of positive and negative forms of *reik(ė)ti* 'need' in the humanities and the biomedical sciences exhibits a great similarity with the positive forms clearly dominating in both science fields.

The overview of the quantitative results in old Lithuanian and contemporary Lithuanian texts shows that the frequency trends of the use of *reik(ė)ti* 'need' generally follow similar paths. Section 4 looks at the results of the qualitative analysis in contemporary Lithuanian.

4. *Reik(ė)ti* 'need' in contemporary Lithuanian: qualitative analysis

For the qualitative analysis a number of instances of the most frequent present tense positive form *reikia* 'need.PRS.3' from all corpora used for the study was examined in context to determine its semantic range and the most typical meaning. 400 occurrences of *reikia* 'need.PRS.3' were randomly selected from the fiction sub-corpus, and 400 occurrences were taken from the academic language sub-corpora (200 occurrences from each science field). We used an online random number generator (www.randomizer.org) for the selection of the sentences for the qualitative analysis.

As has been mentioned in the introduction, the paper follows van der Auwera and Plungian's (1998) modality framework. At the initial stages of the qualitative analysis we distinguished modal uses from non-modal uses of *reikia* 'need.PRS.3'. Then we applied van der Auwera and Plungian's (1998) modality framework to our data. It was found that all the three non-epistemic types of modal meanings (deontic, participant-external, participant-internal) can be conveyed by *reikia* 'need.PRS.3'; however, the extent to which they appear in different data sets is different. Additionally, in our qualitative analysis we distinguished one more use of *reikia* 'need.PRS.3', which appeared to be specific to academic discourse and which is labelled *discourse organising* use.

Table 8 shows how the meanings of *reikia* 'need.PRS.3' are distributed in the three sub-corpora of fiction and academic texts.

Table 8. *The semantic range and distribution of meanings of* reikia 'need.PRS.3' *in the sub-corpora of contemporary Lithuanian*

Meaning conveyed by *reikia* 'need.PRS.3'	CCLL: Fiction		CorALit: Biomedicine		CorALit: Humanities	
	# n	%	# n	%	# n	%
Deontic	228	57%	105	52.5%	70	35%
Participant external	51	12.75%	24	12%	36	18%
Participant internal	12	3%	0	0%	0	0%
Discourse organising	2	0.5%	23	11.5%	52	26%
Non-modal	99	24,75%	46	23%	37	18.5%
Ambiguous	8	2%	2	1%	5	2.5%
Total:	400	100%	200	100%	200	100%

We can see from Table 8 that roughly half of the uses of the sampled *reikia* 'need.PRS.3' in fiction and biomedical texts and as many as 35% of it in the humanities express deontic modality. In the fiction sub-corpus, the positive *reikia* 'need.PRS.3' is firstly associated with the subjective deontic meaning: the modal source coincides with the speaker who directively expresses his/her subjective attitude towards the state of affairs. Thus, the speaker gives a piece of advice, makes a suggestion, or simply describes the correct course of action for the particular situation. The speaker directs his/her recommendation at a specific addressee:

(16) - *Aš čia esu vadas! - kietai nutraukė Pelužio kalbą valdovas. - Geriau už tave žinau, ką* ***reikia*** <need.PRS.3> *daryti, o paties darbas - klausyti mano paliepimų!* (CCLL-Fict)
'I am the leader here! - the lord rigidly interrupted the talk of Pelužis. - I know better than you what **needs** to be done, and your work is to listen to my orders!'

Reikia 'need.PRS.3' may also convey strong obligation that springs from some set of rules, ethical or social norms, as exemplified in (17), but this sub-type of deontic meaning is quite rare in the fiction sub-corpus:

(17) - *Vandenį dar* ***reikia*** <need.PRS.3> *užsitarnauti. Už vandenį* ***reikia*** <need.PRS.3> *susimokėti. Ar kada pagalvojai, kiek žmonių pasaulyje stokoja vandens?* (CCLL-Fict)
'Water **needs** to be earned. One **needs** to pay for water. Have you ever thought about how many people in the world lack water?'

The analysis shows that the dative argument of the verb *reikia* 'need.PRS.3' in necessitive constructions is overwhelmingly covert: examples with an implicit quasi-subject make up as much as 92.7% of the overall use of *reikia* 'need.PRS.3' with infinitival complementation in the analysed fiction data. This tendency is reflective of the type of necessity conveyed by the verb *reik(ė)ti* 'need': on the one hand, since necessity is often general and the modal target is generic, there is no need to have an overt quasi-subject in the sentence. On the other hand, a common meaning of *reikia* 'need.PRS.3' is that of recommendation, thus, the subjectless *reikia* 'need.PRS.3' can be seen as an indirect way to impose obligation on the addressee. This is in line with the observation made by Smith (2003) for the English data: according to the author, when the English modal verb *need (to)* is used with a passive verb phrase (i.e. with the undetermined empty subject *it*), "the pragmatic interpretation of obligation imposed on others seems inferable, albeit more disguised" (Smith 2003, 261).

The comparative axis between the use of *reikia* 'need.PRS.3' in contemporary Lithuanian fiction texts and old Lithuanian texts reveals interesting results. The contexts where *reikia* 'need.PRS.3' can be used have extended and, as is evident, deontic meaning is no longer restricted to religious contexts: rather, obligation arises in the direct environment and the source of it often coincides with the speaker. In other words, in OLW the speaker merely reports an obligation imposed by the set of rules or religious conventions, while in the contemporary Lithuanian it is the speaker and not a religious force that obliges someone to do something. Hansen (2004, 254) has established a similar semantic path of necessity for Russian: over time, the Russian modals conveying 'religious obligation' developed 'subjective' obligation alongside 'objective necessity'. It can also be claimed that the Lithuanian verb *reik(ė)ti* 'need' may be associated with the process of subjectification in the sense of Traugott (1989): in contemporary Lithuanian *reik(ė)ti* 'need' becomes subjective in that its meaning is to some extent "based in the speaker's subjective belief state/attitude towards the proposition" (Traugott 1989, 311).

The range of the deontic contexts of the use of *reikia* 'need.PRS.3' in academic discourse spans from institutional obligation (18) to subjective recommendations of the authors of the text (19)-(20):

(18) *Lietuvoje, skirtingai nei užsienio šalyse, nėra nustatomos terminuotos datos, iki kada priimamos paraiškos (kiekvienais metais skelbiamas atskiras konkursas ir nurodoma, iki kada* ***reikia*** <need.PRS.3> *pateikti paraiškas ar projektus).* (CorALit-H)
'In Lithuania, differently from foreign countries, there is no set date for the submission of applications (every year a separate competition is announced and the deadline until which it is **needed** to submit applications or projects is indicated.'

(19) *Kaip matyti, būsimo vyro ar žmonos rinkimosi motyvacija nėra tiek bloga, bet meilės pagrindu kurti šeimą rinkosi vos 7 tiriamieji. Yra pagrindo teigti, kad jaunimą* ***reikia*** <need.PRS.3> *mokyti kurti sėkmingą šeimą.* (CorALit-H)
'As can be seen, the motivation for choosing a future husband or wife is not too bad, however, love as the basis for family creation was indicated only by 7 respondents. This gives grounds for the claim that young people **need** to be taught how to create a successful family. (Lit. **it is needed** to teach young people ...).'

(20) *Mūsų nuomone,* ***reikia*** <need.PRS.3> *atlikti iš karto radikalią operaciją.* (CorALit-B)

‘In our opinion, a radical operation **needs** to be performed straight away. (Lit. **it is needed** to perform a radical operation).’

It should be admitted that the meaning of institutional deontic obligation expressed by *reikia* ‘need.PRS.3’ was quite rare in the data analysed. We can assume that for the objective institutional obligation a more frequent choice might be the already mentioned *turėti* ‘have to’ or *privalėti* ‘be obliged to’. Though formally there is no gradation of the strength of obligation encoded in *reikėti* ‘need', *turėti* 'have to’ or *privalėti* ‘be obliged to’, intuitively the latter two verbs seem to be more formal as well as appear to have stronger semantic connotations of obligation than *reikėti* ‘need’. As exemplified by (19)-(20), *reikia* ‘need.PRS.3’ can also be used in academic discourse to share authors’ recommendations with the rest of the professional expert community. Such uses of *reikia* ‘need.PRS.3’ typically appear in research articles when authors share their insights stemming from the results of the conducted research or from their professional expertise.

The deontic *reikia* ‘need.PRS.3’ can also be employed in academic discourse to indicate procedural instructions typical of the profession (21) or to provide justification for the research carried out (22):

(21) *Mikroskopas yra svarbus įrankis, tiriant smulkiuosius objektus, kuriems priklauso ir mikroorganizmai. Tai sudėtingas prietaisas, todėl, norint sėkmingai su juo dirbti,* **reikia** <need.PRS.3> *laikytis taisyklių:* <...>. (CorALit-B)

‘A microscope is an important tool for the investigation of small objects, which also include microorganisms. It is a complex device, therefore, in order to use it successfully, one **needs** to keep to certain rules: <...>. (Lit. **it is needed** to keep to certain rules...).’

(22) *Visa tai rodo, kad* **reikia** <need.PRS.3> *kiek plačiau paanalizuoti Vaižganto etines ir literatūrines pažiūras, aptarti kultūrinės veiklos nulemtas idėjines pasaulėžiūros formavimosi ištakas, pabrėžti rašytojui būdingas socialines bei estetines nuostatas. Pateikta analizė yra bandymas įvertinti Vaižganto kūrybos, kultūrinės veiklos, pasaulėžiūros recepciją žurnale „Akademikas"* <...>. (CorALit-H).

‘All this goes to show that one **needs** to analyse to a larger extent the ethical and literary views of Vaižgantas, to discuss the origins of his ideological worldview, determined by cultural activities, to emphasize social and aesthetic beliefs characteristic of the author. The present analysis is an attempt to evaluate the reception of Vaižgantas’ creative works, cultural activities and worldviews in the journal "Academic" <...>. (Lit. **it is needed** to analyse...).'

As mentioned in the introduction, both academic sub-corpora include a number of genres, one of which is a textbook genre. This explains a fairly frequent deontic use of *reikia* 'need.PRS.3' which has instructional or procedural flavour, as in (21). Such uses of *reikia* 'need.PRS.3' typically tell the reader of the textbook what is expected from a particular profession, provide a set of instructions on how to proceed in a particular work-related situation, etc. An interesting use of *reikia* 'need.PRS.3' is in contexts exemplified by (22), where the modal verb emphasizes the need for specific research. In the well-known CARS rhetorical structural model of a research article introduction offered by Swales in 1990, the second rhetorical move is called 'creating a research space or niche'. What follows is the author occupying the niche by presenting his or her research. (22) is a typical example when the niche for the research is created by *reikia* 'need.PRS.3' and in the following sentence the author presents his/her study that fills in the research gap.

Samraj (2002) usefully expands Swalesian rhetorical model of the research article introduction including the so called positive justification, i.e. occasions when "writers explicitly provide positive reasons for conducting the study reported" (Samraj 2002, 9). Examples of positive justification including *reikia* 'need.PRS.3' can also be found in Lithuanian academic discourse, a typical case being (23):

(23) *Skurdo problematiką* ***reikia*** <need.PRS.3> *nagrinėti siekiant kuo labiau sumažinti atotrūkį tarp kaimo ir miesto bei padėti pažeidžiamiausioms kaimo gyventojų grupėms išsivaduoti iš skurdo ir integruotis į visuomenę*. (CorALit-H).
'The problems of poverty **need** to be examined in an attempt to minimize the distance between the countryside and the city and to help the most fragile groups of the rural inhabitants to free themselves from poverty and integrate into society. (Lit. **It is needed** to examine the problems of poverty...). '

Example (23) comes from an article focusing on the manifestation of poverty in Lithuanian villages. It occurs in the introduction of the article and *reikia* 'need.PRS.3' helps to justify and highlight the importance of research on poverty before the aims of the actual study are presented.

The more applied and empirical nature of biomedical sciences might explain a higher percentage of the deontic *reikia* 'need.PRS.3' in this science field compared to the humanities. It is quite typical to provide recommendations to other professionals in the field based on the empirical research conducted.

Another line of cross-disciplinary contrast can be noticed in the use of *reikia* 'need.PRS.3' for organising discourse. This use of *reikia* 'need.PRS.3' is much more frequently exploited by scholars in the humanities than in the biomedical sciences. The discoursal *reikia* 'need.PRS.3' is typically used in combination with such mental verbs as *think* or *keep in mind* or discourse verbs such as *note*, *say*, *emphasize*, etc. as in (24)-(25):

(24) *Apibendrinant* ***reikia*** <need.PRS.3> ***pažymėti****, kad tiek tradicinio ūkininkavimo, tiek ekologinio ūkininkavimo respondentai labiausiai vertino vietinius ar regioninius atsakingus* <...> *darbuotojus.* (CorALit-B).
'In conclusion it **needs to be noted** that the respondents of both traditional farming and ecological farming expressed most appreciation for the local or regional responsible workers.'

(25) ***Reikia*** <need.PRS.3> ***pripažinti****, kad kai kurios jaunųjų intelektualų skelbtos įžvalgos ilgainiui pasirodė pranašiškos.* (CorALit-H)
'**It needs to be be admitted** that some of the insights proclaimed by young intellectuals turned out to be prophetic.'

Used at the beginning of the sentence, such combinations serve as attention getting devices which can be employed at rhetorically important stages in the development of academic argument. It is especially obvious in (24) above, where the author uses the rhetorical attention getter 'it needs to be noted' alongside the marker of conclusion.

A very similar use of modals with the so-called speech act verbs has been described in various studies on English modality. Leech (1987, 76) mentions impersonal phrases such as 'it may be noted', which are popular in academic literature and which he considers to be "rather empty formulae soliciting and focusing the reader's attention" (ibid). Vihla (1999, 32) distinguishes such uses of modal verbs as in 'it must be noted' or 'it should be stressed' from epistemic, deontic and dynamic readings as they convey rhetorical emphasis rather than "oblige certain forms of action" or "relate to the physical world described" (ibid.). While metadiscursive meaning is clearly foregrounded in the expressions with *reikia* 'need.PRS.3' and speech act or mental verbs, the modal meaning of obligation still seems to be remaining though significantly bleached.

In her discussion of *must*, Coates (1983, 35-36) mentions cases when it co-occurs with such verbs as *say, admit, confess, warn* and first person singular. According to Coates, such examples of use are "odd in that the speaker is actually performing what he is in the act of urging himself to do; that is *I must admit* means *I admit*" (Coates 1983, 36). The same observation could be applied in the case of the discursive *reikia* ‘need.PRS.3’ and a verb of saying. When the author of (25) says ‘it needs to be admitted’ s/he is also implying that s/he admits it too. It is not surprising that this use of *reikia* ‘need.PRS.3’ is much more frequent in the humanities rather than in the biomedical sciences. As already mentioned, the humanities are much more interpretative and the authors rely on metadiscourse elements of text construction and argumentation more frequently than scholars in the natural sciences. Equally unsurprising are the scarce results of this discourse organising use of *reikia* ‘need.PRS.3’ in fiction where only two examples have been found. The old Lithuanian texts obviously did not exhibit any of the discourse organising uses of *reikia* ‘need.PRS.3’.

Finally, the constructions with *reikia* ‘need.PRS.3’ and speech act or mental verbs seem to be illustrative of the process of intersubjectification as defined by Traugott (2010, 35), who claims that “subjectification and intersubjectification are the mechanisms by which: a. meanings are recruited by the speaker to encode and regulate attitudes and beliefs (subjectification), and, b. once subjectified, may be recruited to encode meanings centred on the addressee (intersubjectification).” It appears that the rhetorical power of *reikia* ‘need.PRS.3’ in the constructions with speech act verbs is directed at the reader or addressee and that involves intersubjectification.

Participant external modality conveyed by *reikia* ‘need.PRS.3’ is not as frequent as its deontic subtype: in fiction, participant-external necessity makes up 12.75% of the overall occurrences of *reikia* ‘need.PRS.3’, and it accounts for 12% and 18% of the cases analysed in the texts of the biomedical sciences and the humanities respectively. When *reikia* ‘need.PRS.3’ expresses participant external modality, it refers to the situations when the obligation to do something stems from external circumstances:

(26) *[N]uolydis nuo kalvos status,* ***reikia*** <need.PRS.3> *laikytis, kad nenukristum nuo motociklo sėdynės.* (CCLL-Fict)
‘The slope from the hill is steep, one **needs** to hold oneself, so that not to fall from the seat of a motorcycle.’ (Lit. **It is needed** to hold oneself ...).

Again, the modal target is generic and in the majority of the analysed sentences unexpressed.

There were no cases of participant internal necessity attested in both academic sub-corpora, while in the fiction sub-corpus it appears to be the least frequent among the modal meanings of *reikia* ‘need.PRS.3’, and accounts for 3% of all the occurrences of the verb. In this case, the referent of the dative argument of *reikia* ‘need.PRS.3’ refers to the locus of internal compulsion or need for something, e.g.:

(27) *Bet posėdžių salėje - nė menkiausio vėjelio. Tai gerai. Man* ***reikia*** <need.PRS.3> *susikaupti.* (CCLL-Fict)
'But in the meeting room there is not a single breeze of wind. This is good. I **need** to concentrate. (Lit. **It is needed** for me to concentrate)'.

The corpus findings show that in the case of participant-internal necessity the 1st person subjects are most common (cases in point are *man* 'I.DAT' or *mums* 'we.DAT'). It is quite natural that *reik(ė)ti* 'need' is firstly associated with participant-external necessity and not with participant-internal one. As has been noted by Besters-Dilger et al. (2009, 190), there is a close interplay between impersonality and the modal meaning of necessity: "[n]ecessity is felt as something outside the person, hard to influence, therefore it was originally not expressed by a personal verb which would reflect a certain freedom of action of the individual". Thus, the Lithuanian impersonal verb *reik(ė)ti* 'need' as well as another impersonal verb *tekti* 'be gotten' (cf. Usoniene and Jasionyte 2010) are specialized for participant-external modality, namely participant-external necessity.

Concluding observations

The quantitative analysis shows different frequency of *reik(ė)ti* 'need' in the fiction and academic sub-corpora of contemporary Lithuanian with the verb most frequently employed in the fiction sub-corpus. Despite the fact that the overall frequency of *reik(ė)ti* 'need' differs in contemporary Lithuanian, more specific quantitative patterns show similar trends. The morphological present tense form *reikia* 'need.PRS.3' occurs most frequently in all the sub-corpora analysed, including old Lithuanian. In the same vein, positive forms of the verb clearly prevail in all types of discourse and across different time periods.

The qualitative analysis confirms that modal constructions with *reikia* 'need.PRS.3' already appear in the 16th century and the earliest occurrences of the constructions with *reik(ė)ti* 'need' carry a clear modal meaning.

The functions of the modal *reikia* 'need.PRS.3' in the OLW partly resemble those in contemporary Lithuanian. *Reikia* 'need.PRS.3' in the sub-corpora analysed, especially those of fiction and biomedical sciences, is firstly associated with the deontic sub-type of participant-external necessity. Participant-internal necessity which appeared as part of the semantic content of *reikia* 'need.PRS.3' in the fiction sub-corpus of the contemporary Lithuanian, has not been attested in the old Lithuanian data. In this respect the Lithuanian *reikia* 'need.PRS.3' could confirm the hypothesis that the semantic development of the verb 'need' was from participant-external necessity to participant-internal one (cf. Taeymans 2006; Loureiro-Porto 2009; Narrog 2010, 2012). However, the old Lithuanian texts under analysis are restricted to religious contexts and this could be one of the main reasons why *reikia* 'need.PRS.3' is not used to express participant-internal necessity in OLW. Thus, the observation on the semantic change from participant-external to participant-internal necessity is a very tentative one.

The notion of subjectification (Traugott 1989) proved important to describe the changes in the semantic content of *reikia* 'need.PRS.3'. In OLW, the meaning of *reikia* 'need.PRS.3' is restricted to religious contexts and the source of modality is of the 'objective' nature: typically, the force that obliges/recommends someone to do something is some religious convention. In contemporary Lithuanian, *reikia* 'need.PRS.3' exploits the more 'subjective' deontic meaning since no religious norm is implied and the source of modality is most often the speaker her/himself.

The most obvious contrast in the academic discourse domain has been observed in the functional distribution of *reikia* 'need.PRS.3'. While texts in the biomedical sciences typically employ the verb to emphasize the deontic nature of recommendations or procedural instructions, the humanities sub-corpus sample also displays a fairly frequent use of the verb to construct more argumentative discourse. Combined with mental verbs or verbs of saying and typically placed in the clause initial position, *reikia* 'need.PRS.3' serves as an important attention getting device adding more rhetorical power to the discursive and interpretative discourse of the humanities.

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Gauta: 2016-12-22
Priimta: 2017-01-13